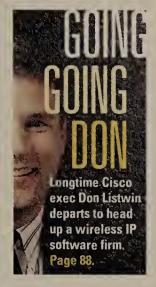
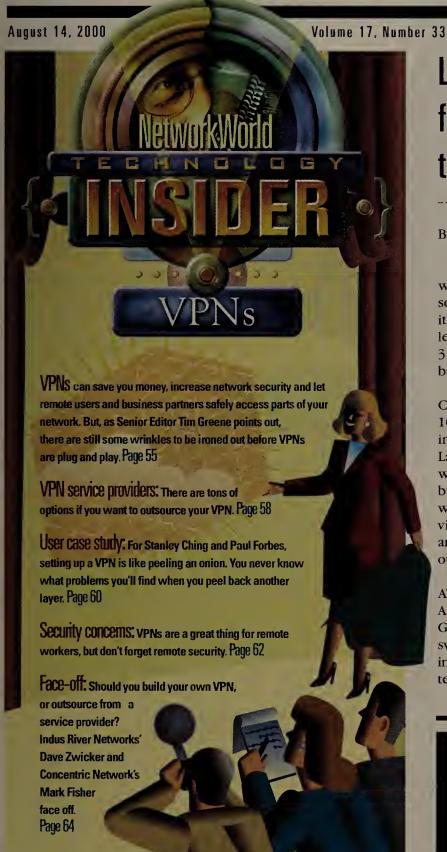
The leader in network knowledge





Layer 3, ATM features coming to Cisco switches

BY JIM DUFFY

SAN JOSE - Cisco this week is expected to unveil several key enhancements to its ATM switches designed to let users better integrate Layer 3 Ethernet networks with cellbased infrastructures.

The new products for the Catalyst 8500 and LightStream 1010 series switches are intended to tightly couple Layer 3 packet forwarding with ATM. This may help users build hybrid multiservice networks — combining voice, video and data — using frames and cells instead of one or the

The LAN and enterprise ATM markets are in decline. According to the Dell'Oro Group, the enterprise ATM switch market has contracted in five of the past seven quarters by an average of 10%. In See Cisco, page 88

The network portal: www.nwfusion.com

Red Hat boosts Linux security

Release 7.0 to feature more stable kernel.

BY DENI CONNOR

TRIANGLE RESEARCH PARK, N.C. — Red Hat is prepping an upgrade of Linux that lets system managers significantly tighten the security of their networks, as well as more easily install and configure the \\\0.03 \\ \\0.05 operating system.

Code-named Pinstripe and referred to in prerelease Red Hat documentation as Linux 7.0, the new version supports features that users in corporate environments have long sought. They include several easy-to-use desktop interfaces and a hardened Linux kernel that makes the operating system more stable (see graphic, page 84). The upgrade is scheduled to ship by year-end.

"Pinstripe offers better support for recent hardware, a more secure base install, integration of many popular pack-See Red Hat, page 84

CA, IBM and VA Linux to air new wares.

Covalent to make Apache Web server more enterpriseready.

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DocFinder: 9438

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See Family e-ffair, page 20

into e-commerce.

BY ELLEN MESSMER

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ETO



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F5 gets into caching game.



Cisco's Listwin to start over.



Relaying technology's importance at start-up.

Face-off: Should you build your own VPN, or outsource from a service provider? Indus River Networks' Dave Zwicker and Concentric

Network's Mark Fisher face off. Page 64

VPNs can save you money, increase network

security, and let remote users and business partners safe-

ly access parts of your network. But, as Senior Editor

Tim Greene points out, there are still some wrinkles to

be ironed out before VPNs are plug and play. Page 55

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Sometimes it seems like the only answer; bribe your servers to "cooperate." But once you start paying them off, their greed and

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RESEARCH

Win 2000 Cheat Sheet:

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Farm it out

Outsourcing is one of those buzzwords that's hard to pin down. Use our extensive research area to find out what the difference is between an application service provider and an outsourcer. Read up on IDC's latest "Tracking the Trends" report about outsourcers. Also, get some outsourcing tips from Automatic Data Processing. DocFinder: 9431

Tolly Research

IT testing experts Tolly Research have a new report series called IT Clarity. Check out the latest results from its labs, including link aggregation tests, network interface card and Citrix MetaFrame products. Tune in each week to find out how the latest products and services have fared. DocFinder: 9432

INTERACTIVE

Brown Orifice

A new, unsigned Java applet called "Brown Orifice" could let a hacker gain access to a personal computer via Netscape Navigator. The applet exploits a flaw in all versions of Navigator and Sun's Java language. Brown Orifice can view files on an infected machine. Find out more about this and other hazards with our Security Alerts page. DocFinder: 9433

Big bandwidth vs. smart bandwidth

If you missed our Webcast of "The Networked World," don't worry. Watch the rebroadcast to find out if it's better to bulk up your bandwidth or implement quality of service. Also, check out Net Buzz columnist Paul McNamara's rant about online gambling. DocFinder: 9434

SEMINARS & EVENTS

Want a killer Web infrastructure?

Ensure your network is strong enough and fast enough to support the demands of today's Web computing environment. Sign up now for our High-Performance Web seminar. DocFinder: 8851

BARNEY'S RUBBLE

The best of the NetFlash daily newsletter

A new (not final) coming of Netscape 6

Netscape may have lost the browser war, but it hasn't completely given up the fight. The company is working on Netscape 6, an update driven by its Gecko open source effort. The relatively small browser is packed with a ton of new features, including a password manager and increased customization. Unfortunately, the browser, which is in beta testing, lacks stability making it a perfect complement for any Windows 95 system.

DocFinder: 9443

Bug caught in Netscape's browser

One thing Netscape might want to fix in its upcoming browser is a hole that lets hackers access files. The vulnerability centers around Netscape's use of Java, letting a hacker load a Java applet onto a victim's computer that reads or retrieves files. DocFinder: 9444

CIA recruiting spies on the Web

Tired of designing networks, or more often the case, fixing them? Well, if you were Web browsing recently, you may have come across a job that requires a sense of adventure, great intelligence, courage and a sense of national pride. The job is a "Clandestine Services Operative" — otherwise known as a spy. DocFinder: 9445

Cooperation spurs DSL development

If one standard is good, then nearly 20 must be even better. At least that's what the DSL industry seems to think. Now Cisco, 3Com and Qwest are working on a software specification that is supposed to improve interoperability among DSL gear and make it easier to install. DocFinder: 9446

— Doug Barney, executive editor, news

Sign up for this e-mail newsletter online. DocFinder: 3850

COLUMNISTS

Keeping Current

Striking Out

It's baseball season, so let the strikes begin. Fred McClimans weighs in on the Communications Workers of America action against Verizon. DocFinder: 9435



Water Cooler

Can Cisco continue its domination? With the departures of several top-level execu-

tives, will Cisco keep its house in order? Associate News Editor Michael Cooney offers his take. DocFinder: 9436



View from The Edge

Your DSL business plans and the RBOCs Where do the Bells fit in to service providers' DSL plans? Managing Editor David Rohde lets you know. DocFinder: 9437

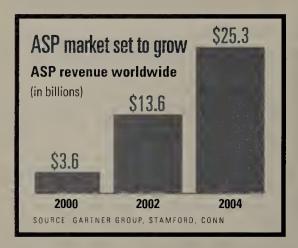


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NEWS BRIEFS, AUGUST 14, 2000

Bumps seen for ASPs

The worldwide application service provider (ASP) market will hit \$25.3 billion by the end of 2004, but some early adopters and providers will be burned along the way, according to Gartner Group, a research firm in Stamford, Conn. "We see the beginning of what Gartner calls the 'Trough of Disillusionment' stage of the market," says Audrey Apfel, Gartner research director. "What generally happens ... is vendor consolidation, market restructuring, resegmentation and the renaming of the market."



There are 480 retail ASPs, according to Gartner. By the end of 2001, Gartner predicts 60% will fail or be gobbled up by competitors. Gartner believes those that survive will concentrate on delivering business services rather than just applications.

Verizon snaps up OnePoint

Verizon, the merged Bell Atlantic and GTE, is getting into the building local exchange carrier (BLEC) market by buying OnePoint Communications, which specializes in selling packages of voice, video and data services to specific commercial buildings. Key to the deal is OnePoint's ties with real estate developers that own large office buildings and apartments. Verizon plans to offer voice, Internet access and streaming video-over-DSL connections within the buildings, according to Bruce Gordon, president of Verizon Retail Markets. The purchase is for an unspecified amount and should close by year-end, Verizon says.

Critical path acquires PeerLogic

E-mail outsourcing giant Critical Path continued its acquisition streak with last week's purchase of PeerLogic, a directory services firm specializing in security services. The \$400 million stock transaction is scheduled to close in the third quarter. Critical Path offers a range of outsourced messaging services, including hosted Microsoft Exchange, Web mail, integrated fax and security services. PeerLogic is the ninth company that Critical Path has acquired since June 1999 and its second acquisition in the directory arena following the purchase of Isocor in January. Critical

Path plans to fully integrate PeerLogic's LiveContent Directory with its own InJoin Directory Server and InJoin Meta-Directory engine to provide a full suite of directory services to large corporations.

Insurer apologizes for e-mail snafu

Health insurance company Permanente last week accidentally sent its customers 858 e-mail messages, some of which contained sensitive personal medical information. Kaiser ascribed the mistake to human error and a technical glitch associated with work done on its Web site earlier this month. In addition to reporting the problem to state insurance regulators, Kaiser was phoning recipients of the e-mail to apologize.

Naughton found guilty, sentenced

Patrick Naughton, the 35-year-old former Internet executive at Disney and a co-author of the Java programming language at Sun, last week was convicted by a Los Angeles court for the crime of crossing state lines with the intention of having sex with a minor. The e-mail exchange that led to his conviction was actually sent by an FBI agent pretending to be a 13-year-old girl. The court sentenced Naughton to nine months in home detention with electronic monitoring, a \$20,000 fine and five years probation. Naughton, now living in West Hollywood, had written software for Disney's GO Network to screen foul language and pornography. He was fired after being charged last year.

Muglia to head Microsoft .Net

Microsoft launched its new .Net division



Bob Muglia will direct Microsoft's .Net initiative.

last week with the designation of Bob Muglia as group vice president. Muglia will focus on overseeing the development of software, subscription services and interface design. Muglia was vice president of the division responsible for development of Microsoft Office.

Nortel adding to Passport 4400 line

Nortel Networks this week is expected to extend its Passport 4400 family of multiservice access switches for small firms with a new three-slot version. The Passport 4460 supports voice over IP and voice over frame relay, and features up to 60 voice channels, two 10/100M bit/sec Ethernet ports, and T-1/E-1 drop and insert multiplexing. Nortel is expected to introduce device management software for the 4400 line, including a Webbased configuration tool, deployment and reporting packages, and a graphical installation application.

Venerable user group cancels show, cuts staff

BY DAVID ROHDE

NEW YORK — One of the nation's oldest user groups for network professionals suffered a major blow last week as it was forced to cancel its annual convention.

The move by the Communications Managers Association (CMA), a 52-year-old group that represents corporate users in the Northeast, is the latest in a string of recent problems affecting traditional telecom user groups with a voice communications heritage.

CMA President Charles Murray sent members a letter saying the group's Corporate Networks 2000 conference, scheduled for October in New York, would not be held. Murray attributed the decision to low booth sales to exhibitors.

CMA had sold only 75 of its 140 available booth spaces, Network World learned. Even the maximum 140 was a reduction from previous years' shows in an attempt to prevent this year's edition from looking underbooked.

Murray, a telecom director with The Travelers Group, also says CMA's professional staff in its New Jersey headquarters is being dismissed to save money. CMA's traditional monthly educational seminars will resume later this year, though the group recently has

Northeast watchdog

Facts about the Communications Managers Association:

Founded: 1948

Number of member companies:

Principal activities: Monthly seminars, annual convention, scholarships, liaison with carriers in the Northeast.

been skipping some months. CMA will continue holding occasional liaison meetings with carriers with a heavy presence in the region, such as Verizon and AT&T.

Industry observers say CMA's woes are not unique among groups whose core membership consists of telecom managers.

"A lot of communications associations are having problems right now," says Ruth See CMA, page 84

IBM beefs up Web-to-host

BY MARC SONGINI

LAS VEGAS - IBM this week will roll out new software suites and upgraded products designed to help companies bring more of their host applications to the Web.

The company will announce at its Solutions 2000 developers conference in Las Vegas that it is collapsing a number of its separate host-access products into suites — a repackaging that could save users tens of thousands of dollars.

The Web-to-host market, which is growing rapidly, means big business to IBM. The market should hit \$1.5 billion by 2004, up from \$240 million in 1999, according to IDC, a

Framingham, Mass., market research firm. IBM leads the market with a 33% share, followed by Attachmate at 17.5% and a half-dozen other minor players.

Among the new suites from IBM is its Host Access Client Package 1.0. This collection of server software gives clients access to host data and applications. The suite consists of several previously separate products, including Personal Communications (PCOMM), IBM's traditional green-screen host-emulation tool; Host On-Demand, a Java-based greenscreen terminal emulator; and the IBM Screen Customizer, which can slap an HTML face

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Verizon takes NorthPoint to make national DSL move

Deal puts former Bell Atlantic/GTE company in competition with AT&T for high-speed net services.

BY TIM GREENE

NEW YORK — Just as TV ads featuring actor James Earl Jones are broadcasting the message that the merged Bell Atlantic and GTE are now called Verizon, the new company is moving on to significantly boost its broadband offerings.

The company last week announced plans to take control of NorthPoint Communications, giving it a national and international DSL network that supports broadband VPNs as well as voice, video and data services over one phone line. This is good news for enterprise customers seeking DSL services because it gives NorthPoint, which has focused on serving business customers, the huge financial resources of Verizon, which has focused on residential DSL services.

"Verizon's marketing and advertising budgets will enable NorthPoint to do more with its infrastructure than it could have hoped to do on its own," says Carl Garland, an analyst with Current Analysis in Sterling, Va.

Verizon says \$450 million of its \$800 million NorthPoint

Busy week for Verizon

Last week was notable for Verizon, the merged Bell Atlantic and GTE, as the company:

- Announced plans to absorb DSL carrier NorthPoint Communications for \$350 million.
- Bought OnePoint Communications, a local carrier delivering service packages to commercial and residential buildings.
- Announced net income of \$2 billion for the second quarter, up from \$1.9 billion for the second quarter last year.
- Was hit by a strike of 87,200 employees fighting to unionize wireless workers and to improve vacation and overtime policies.

investment will be used to upgrade NorthPoint's network.

NorthPoint, a DSL start-up formed in 1997, has installed DSL gear in 1,500 local phone company offices across the U.S. Verizon has installed DSL equipment in 1,700 of its switching offices limited to the Northeast. There is some overlap, but when the deal is completed sometime before mid-2001, the two will have presence in 3,500 to 3,700 separate switching offices,

according to Liz Fetter, NorthPoint's CEO. Verizon will also share in a new European DSL joint venture called Versatel.

This deal throws Verizon into competition with AT&T, which is racing to upgrade its cable networks so it can offer bundles of high-speed local access services, Garland says. Verizon might have the edge because DSL technology is more stable in production networks than cable networks

made up of fiber-optic and coaxial cable.

The deal is a blow to other major DSL specialists, Covad Communications and Rhythms NetConnections, says Claudia Bacco, a DSL analyst with TeleChoice, a telecom market research firm in Boston. The companies have aspirations to serve business and residential customers, but lack the money to do so rapidly on a large scale, she says.

Covad started as a whole-saler and is trying to add retail DSL services to its line via the purchase of BlueStar Communications. NorthPoint is gaining a much more powerful retail force by aligning with Verizon, Bacco says. Rhythms has been selling retail and wholesale on its own.

Covad and Rhythms face the same fate of being snapped up by other larger carriers, says Robert Rosenberg, president of InSight See Verizon, page 14

Vendors form DSL interoperability group

BY MICHAEL MARTIN

SAN JOSE — Several equipment vendors and service providers last week launched a program aimed at achieving full interoperability among DSL gear, an effort that could lead to lower equipment pricing and speedier service rollouts.

However, one leading DSL vendor — Copper Mountain — questioned the objectivity of the program, noting that Cisco is the only major DSL access multiplexer (DSLAM) vendor involved.

DSLAM equipment is located within service provider central offices to aggregate DSL subscriber lines.

The new program, known as the OpenDSL initiative, has the backing of DSL equipment and chip manufacturers, systems integrators and service providers (see graphic). The program also has the backing of the DSL Forum, an industry group that promotes the usage of standards-based DSL.

OpenDSL's main goal is to ease the DSL installation burden most service providers bear, says Enzo Signore, director of marketing for Cisco's DSL

Opening up DSL

The goal of the OpenDSL initiative is to make all DSL gear interoperable and create a retail market for DSL customer premises equipment.

Members include:

- 3Com
- Cisco
- Intel
- Qwest Communications
- SBC Communications
- Xircom

business unit. Customers can wait up to six weeks before their DSL orders are fulfilled, Signore says, because service providers must often send personnel to customer sites to complete the configuration of DSL equipment that is not interoperable out of the box.

If DSL customer premises equipment (CPE) and DSLAMs become completely compatible with one another, Signore says, end users could pick up a DSL modem from any retail outlet, plug it in, and be up and running in minutes with all See **Group**, page 12

DSL provider bundles in free firewall service

BY MICHAEL MARTIN

SAN FRANCISCO — National broadband provider DSLnetworks this week will unveil a free, managed firewall service designed to prevent spoofing attacks against the company's DSL customers.

Spoofing is a tactic used by hackers to gain access to users' computers or networks by

finding the IP address of a trusted source and then trying to use that address to enter a workstation or server. DSL lines are vulnerable to spoofing attacks because they are always on and connected to the Internet.

DSLnetworks' firewall service, called NetSentry, is hardware-based and relies on Nortel Shasta 5000 boxes installed in the provider's points of presence.

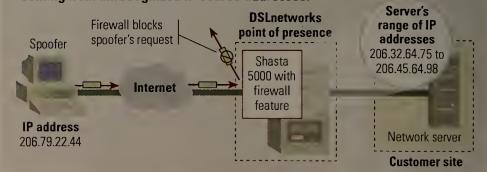
Previously, the only free firewall services available to DSL users have been in the form of downloadable software, says Jeff Wilson, an analyst with Infonetics Research. Downloadable software isn't an ideal security fix, he notes, because it could interfere with VPN clients, and software can take time to roll out. Wilson believes all DSL providers will soon have to provide some free managed firewall capability to their customers.

Some clients are getting NetSentry, and DSLnetworks customers should have the service by the fall. DSL performance will not be affected

See Firewall, page 86

Spoofing spoiler

DSLnetworks' NetSentry service is based on Nortel Shasta 5000 boxes, which include firewall technology designed to prevent IP spoofing attacks on customers' networks. The firewall can block server access requests coming from unrecognized IP source addresses.





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Extreme Networks looks to manage applications

ServiceWatch spoofs client requests to measure server response time; can even work with nets not based on Extreme switches.

BY JIM DUFFY

SANTA CLARA — Extreme Networks this week will unveil software for managing application performance across networks, even those not based on Extreme switches.

The software, called Service-Watch, monitors application request and response time to determine if a problem exists in a network. The software includes a scripting language that enables users to write routines to automate alarm notification or fault correction if a problem is detected.

ServiceWatch runs on Sun Solaris-based systems. It polls servers on an IP network by initiating "synthetic" clientrequest and server-response transactions.

Among the applications ServiceWatch can spoof are HTTP, FTP, Domain Name System and Dynamic Host Configuration Protocol; mail services such as Post Office Protocol 3, Internet Message Access Protocol 4 and Simple Mail Transfer Protocol; news services; and Lightweight Directory Access Protocol directory services.

The software measures the time between request and response to determine if a problem exists, such as a busy network or a server that has been knocked offline. Using the scripting language, users write thresholds indicating a maximum amount of time for a response to return before network conditions are con-

To the Extreme

Features of Extreme's ServiceWatch management software include:

- Layer 7 application monitoring.
- Problem detection via threshold monitoring.
- Ability to monitor multivendor SNMP devices.

sidered problematic.

Once this threshold is crossed, ServiceWatch launches another script to either alert a network manager via pager, e-mail or SNMP trap, or execute routines to correct the fault, such as shutting off a server or eas-

ing network congestion by blocking certain traffic.

ServiceWatch also has an API that lets users add other protocols or "service types" to the monitoring process. In addition, it has an SNMP agent that enables it to share management data with platforms such as Hewlett-Packard's OpenView or Aprisma's Spectrum enterprise managers.

Because it supports standard SNMP messages and management information bases, ServiceWatch can be used with switches from multiple vendors, Extreme says. The company plans to tightly integrate ServiceWatch with its policy-based quality-of-service and service-provisioning software, and other Extreme-specific applications, says George Prodan, vice president of worldwide marketing.

Extreme also plans to add enterprise resource planning

application "service types" to ServiceWatch so it can simulate SAP, Baan and PeopleSoft transactions. Additionally, the company is considering offering an application management service — an Extreme-staffed service monitoring center — based on ServiceWatch.

The company has no plans to offer a ServiceWatch tool kit to software developers so they can instrument their applications to report response time metrics in real time, Prodan says. This would be akin to the Application Response Monitoring API HP and Tivoli unveiled a few years ago.

ServiceWatch is available now and priced based on the number of servers it monitors. Prices range from \$2,995 for a five-server license to \$19,995 for a 100-server license. The extensible API costs an additional \$4,995.

F5 Networks targets cache market

BY APRIL JACOBS

Switch maker F5 Networks last week said it would jump into the caching game with a device it claims will let users more effectively speed up e-commerce and Web sites.

The company's EDGE-FX Cache will speed response times for customers accessing content from sites by off-loading requests for often-used content. F5's cache devices store and serve popular content more quickly than Web servers, processing up to 800 requests

per second.

EDGE-FX Cache features throughput of 50M bit/sec to 80M bit/sec. EDGE-FX Cache will round out F5's Web content product family. The company's 3DNS server provides load balancing, and its BIG-IP switch provides Layer 5-7 switching.

Observers say network managers can make better use of their Web servers by installing caches, thereby reserving their servers for work such as transaction processing. Cache

devices are also used by content delivery network providers to serve content more quickly to users in different geographic regions. By serving content locally, users can save on long-distance fees and keep customers happy with faster response times



F5's EDGE-FX Cache should ship in September.

than they would have received using a central data center.

Katrina Dahlquist, an analyst with IDC in Framingham, Mass., says F5 is well suited to enter the cache market because the company has an established base of users for its intelligent content switches.

"We use both the 3DNS and BIG-IP," says John Brown, vice president of engineering at Activate.com, a streaming media company in Seattle. "I think one of the things F5 has done is watch other players, see what mistakes they have made and avoid them."

Brown cites an example of one cache maker he declined to name that had cache devices aimed at ISPs that worked well in a setting in which general content delivery was the goal. The problem,

> Brown says, was that the devices eould not be configured to prevent content from competitors' sites from being cached and served to potential customers as well something an enterprise user with an

e-commerce site would find disconcerting. "F5's device can allow content blocking," Brown says. In the Web switch market, F5 competes with ArrowPoint, which was recently purchased by Cisco; Alteon, recently purchased by Nortel Networks; as well as Foundry, Top Layer and Extreme. It will now compete with CacheFlow and Intel, among others, in the cache device market.

EDGE-FX Cache will be available in September for \$9,990. ✓

Group

continued from page 10

configuration handled from a central service provider site. This scenario would also see DSL CPE prices drop, Signore notes, because the equipment would become a commodity, rather than a specialty item sold only by service providers.

OpenDSL members are working to establish a certification and testing program with a third-party lab. OpenDSL certification should start as early as the beginning of next year, Signore says.

Keith Higgins, an assistant vice president for DSLAM maker Copper Mountain, says the company will investigate the objectivity of the third-party lab before deciding whether to join the initiative. He questions whether Open-DSL is truly an open group, or a Cisco-driven initiative. "Any time you see an announcement advertised as 'open' and you're a market leader and weren't invited, you wonder what's going on," he says.

Higgins notes Copper Mountain, Lucent and Alcatel — all major DSLAM vendors — have had DSL interoperability programs in place for some time.

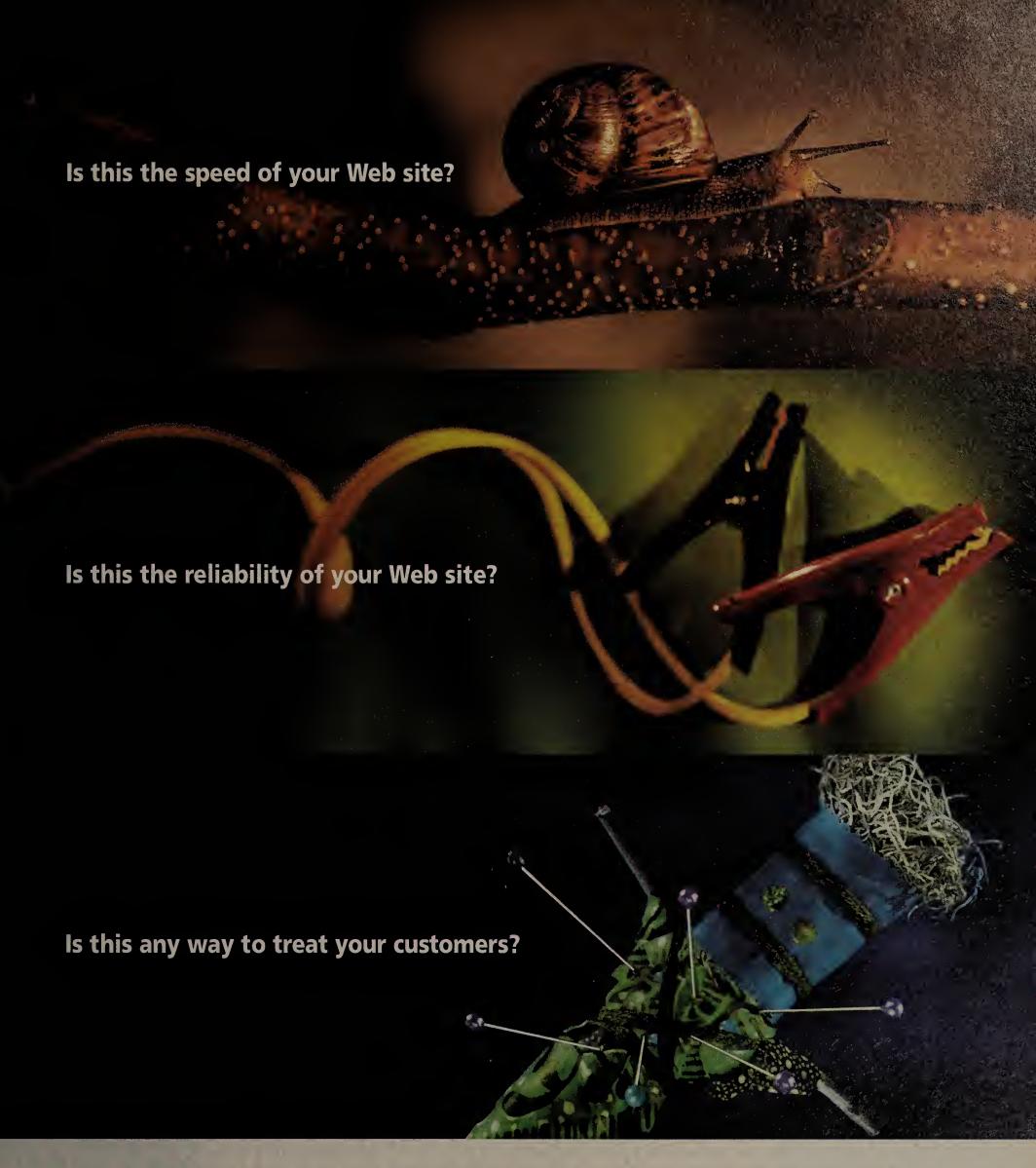
Kathie Hackler, principal analyst with Dataquest in Stamford, Conn., believes OpenDSL is an open initiative and should help move the DSL market forward.

"It certainly can't hurt," she says. "Some of the DSLAM providers, most notably Copper Mountain, tried to create their own minicompatibility programs. The whole idea was to reassure the service providers that might buy their equipment that they'd have a broad range of [CPE] equipment to choose from."

That hasn't really happened though, Hackler notes. Once service providers select a DSLAM vendor, they tend to go with the CPE the service providers believe will work best with their particular DSLAM brands.

Some service providers, such as SBC, Qwest and EarthLink, have started DSL programs in which end users install their own equipment.

OpenDSL: www.opendsl.org



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PSINet takes a turn into ASP market

BY DENISE PAPPALARDO

ASHBURN, VA. — PSINet is still a work in progress 11 years after its inception. The latest evidence: This ISP, best known for Internet access services, will soon be associated with yet another acronym: ASP.

PSINct is gearing up to offer hosted application services to users around the world, says David Kunkel, vice chairman and executive vice president of PSINet.

Two endeavors are fueling PSINet's application service provider push: its recent acquisition of systems integrator Metamor Worldwide — now known as PSINet Consulting Solutions — and



the ISP's quest to nearly double its Web-hosting data centers this year.

While competitors such as UUNET and AT&T offer collocation and hosting services only to ASPs, PSINet will offer hosted application services directly to enterprise customers. Although service specifics are not available, the ISP will compete directly

"PSINet will have one million square feet of Web hosting space by the end of the year."

William Schrader, CEO at PSINet

with ASPs such as Applicast, Corio and USinternetworking, Kunkel says.

PSINet's emphasis on hosting services should benefit customers, says Brownlee Thomas, an analyst with Giga Information Group, a Cambridge, Mass., consulting firm. Instead of radically overhauling its business, PSINet is focusing on what it already

knows, she says.

However, PSINet needs facilities to compete, so CEO William Schrader is promising one million square feet of Web hosting space by year-end. The space will come from nine data centers PSINet is building in Boston;

Dallas; Geneva; Berlin; Paris; Hong Kong; Buenos Aires, Argentina; San Paulo, Brazil; and Sydney, Australia. The ISP already has Web-hosting facilities in Atlanta; Herndon, Va.; Los Angeles; New York; Amsterdam; London; Neuchatel, Switzerland; Seoul, Korea; and Toronto.

Boston's Yankee Group estimates that this year PSINet will be tied with Qwest Communications as the fifth-largest Webhosting service provider in terms of data-center square footage

PSINet's Web hosting sites will not only be used to launch ASP services, but also to support existing e-commerce and Web hosting customers. Kunkel also points out that PSINet will launch unified-messaging services soon.

The ISP's global reach is further along than one might expect, because it just finished a 30-month buying spree. PSINet has acquired 75 service providers and a system integrator in that time, most located outside the U.S.

PSINet is fast at work integrating this multitude of ISP networks onto its global backbone.

"In Europe we're 90% fully integrated; in Asia Pacific countries we're well under way and at about 75% integrated," Schrader says.

In Latin America, PSINet is less than 75% integrated, primarily because some of the ISP's recent acquisitions were there, Kunkel says. All of PSINet's international subsidiaries should be "100% integrated in the next six to nine months," he says. "The hardest part is integrating all of the companies onto the same back-end system, such as accounting."

PSINet has bought its way into an attractive position, Giga analyst Thomas says. As a full-fledged global ISP, it may be attractive to potential buyers.

"PSINet has done a good job of remaining an independent ISP long after most competitors were bought up, but the question is, how much longer can it remain independent?" she says.

Netscape bug wrecks Java system security

"Brown Orifice" opens secure resources to the world.

BY JOHN COX

Confusion is still rife among users more than a week after a Silicon Valley computer consultant found a way to view another computer's files by exploiting some Java-related flaws in the Netscape Navigator and Netscape Communicator browsers.

As some of the initial hysteria dies down, there seems to be a consensus that a properly configured corporate firewall should protect enterprise users, at least until Netscape and Sun come up with necessary repairs.

The companies barely acknowledged the vulnerabilities uncovered by Dan Brumleve and posted on the BugTraq Web site (www.security focus.com) Aug. 4. Computer security consultants and software vendors were more than willing to fill the information gap, some of them fervidly predicting a digital apocalypsc.

It wasn't until last Thursday that Sun finally posted information on what Brumleve called "Brown Orifice," a Java applet he wrote to exploit features in Java and, especially, in Netscape's implementation of Java security. Essentially, the Brown Orifice applet secretly downloads to a user's computer and turns it into a Web server. Then, any outsider can surf to the target PC and read the files that its user can read.

"In my opinion, this is very dangerous because it can be exploited clandestinely without any visible signs to the user and because all information on their computers, including network shares [for example, certain files on servers] to corporate information and databases, is being shared," says Chris Wilson, a technical director for RITC, a Cambridge, U.K. software firm that markets a Web calendar system called Caliday, Wilson the Brown downloaded Orifice applet and worked

Netscape had not returned calls by deadline and a Sun spokesman said Sun software engineers were tied up working on the problem.

Wilson says he connected to his computer using Brown Orifice and could see a directory listing of all files in the shared directory. "I can download any of them, just as if I was using the Navigator to

explore an FTP server," he says. "Brown Orifice also has a bug that allows exploiters to retrieve any file on the system, even outside the 'shared' directory, but apparently this only works on Windows systems."

As of Thursday, Sun's Web site was recommending migrating more current versions of Java products, a solution that may induce stroke in network administrators with hundreds or thousands of desktops. Another option is to shut off Java on all client computers, but that requires instructing corporate users how to do that, and then trusting that they've done it.

Wilson says a properly configured firewall will block connections to the outside world from a user's desktop computer. "This is the best precaution," he says.

At least, until Sun and Netscape can write a better one.



Verizon,
continued from page 10

Research, a telecom market research firm in Parsippany, N.J. These DSL carriers have pushed the technology and developed networks faster than regional Bell operating companies could have done themselves, and RBOCs will take them over as they need them, he says.

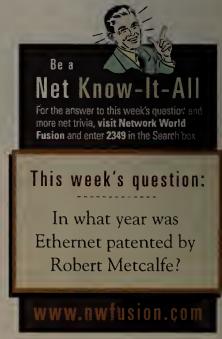
"These [DSL carriers] give the RBOCs a customer base at a lower cost than they could assemble it for themselves," Rosenberg says.

Already SBC Communications, the other super-RBOC, has invested \$150 million in an East Coast DSL service provider, Network Access Solutions (NAS). NAS offers a geographical complement to SBC's DSL services offered in mostly Midwestern and Western states.

Despite the merits of the deal, Wall Street reacted unfavorably to Verizon this week,

with the stock price dropping nearly \$7 in the three days following the announcement. The company's revenue was less than investors wanted for the second quarter, and Verizon was also in the midst of a strike by more than 80,000 workers.

Verizon: www.verizon.com





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LinuxWorld to offer plenty of menu items

BY PHIL HOCHMUTH

SAN JOSE — For those who like to dine a la carte, VA Linux Systems will debut a build-to-order Web program at Linux-World Conference & Expo this week that will let customers buy customized Linux scrvers and workstations from the company's Web site.



LinuxWorld will also feature announcements from Computer Associates, IBM and newcomers Eazel and Hclix Code in the arcas of Linux system and security management, and Linux desktop programs.

Linux was second only to Microsoft in terms of server operating system shipments last year, according to Framingham, Mass., research firm IDC. With that in mind, many vendors at this summer's LinuxWorld are focusing on ways to improve Linux server performance and management in an effort to further integrate the open source operating system into the mainstream.

VA Linux's Build to Order Software (BTOS) service will let users configure their Linux distribution online and finetune the software for specific tasks, such as Oracle database, Apache Web server, firewall, e-mail and a host of other functions.

"BTOS really allows customers to create a system suited exactly for their application needs," says Larry Augustin, VA Linux's CEO. Augustin adds that by choosing only the operating system features that users want, their systems will be more secure and stable.

Users will have more than 700 different packages to choose from when fine-tuning

Enterprising Linux

Several network security and desktop products from traditional companies and other technology vendors will debut this week at LinuxWorld in San Jose.

Company	Product	Description
IBM	IBM Netfinity Manager for Linux	Remote management software for Netfinity- based Linux servers that monitors hardware and operating system performance.
Computer Associates	eTrust Policy Compliance Version 7.2	Network security and management software with support added for Linux and Apache Web server.
Helix Code	Helix Code 1.0	First GNOME-based desktop softwere available for IA64 Linux.
Eazel	Nautilus	GNOME-based Linux graphical user interface that integrates Web browsing, remote network file storage and Linux system updates in a desktop interface.

their Linux operating system. Users will not pay extra for customization of their Linux servers, Augustin says. BTOS prices will range from \$1,500 to \$14,000 depending on configuration.

On the management front, CA, Caldera and IBM are

announcing new network management and security applications for Linux.

Version 7.2 of CA's eTrust Policy Compliance product will be able to manage Linux and Apache Web servers. The tool lets network professionals

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Covalent Technologies expands Apache offerings

BY CAROLYN DUFFY MARSAN

SAN FRANCISCO — Covalent Technologies this week will unveil five products that are designed to make the open source Apache Web server software robust enough for enterprise environments.

Covalent will announce the products at the LinuxWorld conference in San Jose.

The new products are the result of a \$5 million venture

capital investment made late last year by Granite Ventures. Covalent used the money to rev up its product development efforts and to hire a new management team, including president and CEO John Jack, who joined the firm Aug. 1. Covalent founder Randy Terbush, one of the original developers on the Apache project, remains on staff as chief technology officer.

For the past two years, Covalent's flagship product was Raven SSL, an encryption add-on for Apache that has attracted more than 1,600 customers, including Federal Express, AT&T and Hewlett-Packard. Over the next three months, Covalent will add the following products to its roster:

- Nettrust, a packaged Apache Web server that includes a graphics-driven installer, Secure Sockets Layer add-ons and extensions for Java and Perl.
- Raven Conductor, a module that lets SNMP-based systems manage Apache devices on a network.
- A module that provides virus-scanning services to data served on Apache Web servers.
- An intrusion-detection module that lets network managers monitor data served by an Apache Web server to quickly detect any defacing of Web sites.
- A module that provides gateway credit card services and works with offerings from VeriSign and CyberSource.

Pricing wasn't available for the five new products, although Raven SSL sells for \$495 per server.

Covalent also will formally

launch its 24-7 support offering called Apache1st for companies that use Apache in production environments, and the firm will add a professional services organization.

"We are proponents and advocates of the open source movement," Jack says. "By creating products around that core value offering — the open source Apache — we make Apache more enterpriseready to interoperate and integrate into today's business environments."

Future product plans include Vignette offerings and modules that will handle integration between Apache and application servers from BroadVision.

A product of the open source movement, Apache is the most popular Web server software on the Internet. Introduced in 1995, Apache powers more than 63% of the world's Web servers. It competes against Microsoft's Internet Information Server and iPlanet's Web server. Apache's development is led by the Apache Software Foundation.

PROFILE: COVALENT

Location:	San Francisco
Founded:	1994
Primary business:	E-commerce and security products for Apache Web server environments.
Financials:	Received \$5 million in venture funding in December 1999; currently seeking another round.
Employees:	25
CEO:	John Jack, former CEO of Shaman
Fun fact:	Founded in Lincoln, Neb., Covalent recently moved to San Francisco.
Web site:	www.covalent.net



Novell lays out two-year NetWare roadmap

BY DENI CONNOR

PROVO, UTAH — After months of delays and speculation, Novell finally told its loyal NetWare customers that the company's flagship network operating system has a future.

The company will further develop NetWare 5.X, adding capabilities that will make the product more powerful and usable by more types of customers and systems. Novell, which counted on NetWare for more than half of its \$1.27 billion revenue in 1999, has been mum on the future of a product so many companies use.

The firm also said it will deliver later this year a long-promised symmetric multiprocessing version of NetWare that lets users harness the power of multiple server processors. It will ship a 64-bit version of NetWare for graphic- and compute-intensive applications

when Intel delivers its 64-bit Itanium processor.

"At the last BrainShare, Novell hardly said a word about NetWare, its flagship operating system," says Duane Fish, senior managing consultant for IT consultant Terasys in Naperville, Ill. "From that, it seemed to be safe to say that NetWare was going away and Novell was going to be a directory-based company."

Fish says his firm will stick with NetWare 5.1 until there is a compelling business case to move to a different operating system.

While analysts say users will migrate away from NetWare in increasing numbers this year, NetWare's future isn't as dismal as one might suppose. The company will ship one million NetWare 5.X servers this year, up from 580,000 last year, says research firm IDC in Framingham, Mass. A Gartner Group study concluded that

Novell will not lose its installed base leadership until 2002.

As part of further NetWare 5.X development, in the next year Novell will ship several

The File Protocol pack will include Macintosh and Common Internet File System (CIFS) clients, but not Distributed File System (DFS) clients.

"With a highly dispersed enterprise like ours that has a full range of office sizes, we'd love to be able to scale our NetWare and GroupWise servers to fit each need and take advantage of multiprocessor hardware."

Ron Delbert, net and systems manager, Baltimore County

enhancement packs. These packs, which will bolster network performance and scalability, will include IP, file and directory services.

The IP Enhancement Pack will let NetWare 5.X use all the processors in a server.

The directory service pack, dubbed TAO, is Novell's next release of Novell Directory Services eDirectory, which makes use of partitions and lets users blend and merge directories.

Novell will also release a 32-

bit version of NetWare for multiprocessor servers in the first or second quarter of next year that will include processor failover, selective processor matching and DFS support. That 32-bit product, which Novell has promised for three years, is code-named Six-Pack. It will support up to 32 processors and enter beta testing by year-end.

"We buy multiprocessor servers for [Windows] NT but haven't for NetWare in the past because it made no use of them," says Ron Delbert, net and systems manager for Baltimore County Government in Towson, Md. Microsoft has supported up to 32 processors since introducing Windows NT 4.0.

"With a highly dispersed enterprise like ours that has a full range of office sizes, we'd love to be able to scale our NetWare and GroupWise servers to fit each need and take advantage of multiprocessor hardware," Delbert says. Delbert manages 65 NetWare servers.

The same is also true for Rocco Esposito, chief technology officer for window-coverings manufacturer Hunter Douglas, in Upper Saddle River, N.J. "Our Internet stuff will be upgraded to Six-Pack because of disk flexibility, and the perceived uptime [multiprocessing support] will bring," Esposito says. "Every [server] is multiprocessor-ready."

Novell also plans a 64-bit version of the operating system code-named Modesto that will consist of an optimized operating system kernel that has different modules bolted to it. The company's first implementation of Modesto will be a caching device. It will be followed in the first part of 2001 by a storage appliance that runs the Unix Network File System, Microsoft's CIFS, and Novell's Net-Ware Core Protocol, and supports a slew of clients.

As for 64-bit Modesto as an operating system, users aren't willing to step out on that plank, yet. "[Intel's Itanium] is too far out to make a decision today," Esposito says. "I would need to compare [Modesto] to then-present Microsoft offerings. This is particularly true because I have to purchase new hardware to gain [64-bit] benefits."

CA names new CEO; enterprises feel little impact

Sanjay Kumar at the helm, but major product issues remain unresolved, analysts say.

BY MARC SONGINI

ISLANDIA, N.Y. — Computer Associates' reshuffling of upper management last week and its decision to spin off some businesses may play well on Wall Street, but observers say the moves probably won't mean much to enterprise network customers in the short run.

CA, which has seen its stock plunge nearly 50% since the company warned in early July that its first-quarter earnings would be well below expectations, announced that its founder, Charles Wang, would step down as CEO. Taking his place is Sanjay Kumar, who has been CA's chief operating officer and president.

Wang will remain as chairman of the board and develop new, unspecified business ventures.

The company says it remains committed to its enterprise product lines for storage, security, and network and systems management, as well as its application development and business intelligence wares. But it plans to sell some of its noncore businesses, such as AccPac, a desktop accounting and management software product. CA will also spin off a company, dubbed iCan-ASP, devoted to help application service providers run their businesses.

Last week's reorganization is the second announced by CA this year. In the spring, the company said it would split its salesforce in two, one part focused on OS/390-based products and the other on e-business software. However, that earlier move has failed to help CA's bottom line or rev-

enue. The company blamed its disappointing first-quarter results partly on a big slow-down in OS/390-related soft-



Sanjay Kumar in as CEO . . .



Charles Wang remains chairman, but turns focus toward new ventures.

ware sales as customers await the next generation of IBM mainframes.

Those who are already sold on CA's current regime should have no problem with Kumar's ascension to head the firm.

"There is absolutely no concern on our part," says Allan Horn, vice president of technology at USA-Group, a financial services company in Fishers, Ind., that uses CA's products. "We've worked with Sanjay a lot, and we have all the confidence now that we did prior to the announcement. We're still getting

the services we contracted for."

Some observers say while this management reshuffle probably won't hurt CA's enterprise product lines, it's not necessarily going to address areas the firm needs to focus on. What CA really needs to do is better integrate its security and management products to let IS staff get more useful information about a company's Web transactions and other business operations, says John McConnell, principal at McConnell Associates, a Boulder, Colo., consultancy.

More radical changes will be on the way if the company doesn't show stronger earnings and revenue this quarter, speculates Patrick Dryden, an analyst at Illuminata, a Nashua, N.H., consultancy.

What would benefit IS managers most would be if CA spun off some of its more promising technologies and sold them as individual products, rather than bundle them into massive, expensive packages. He says CA's recent spinoff of the Neugents ii e-business neural network technology from the Jasmine ii middleware offering is a case in point.

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Family e-ffair,

continued from page 1

While Jason's parents built J&R's brick-and-mortar and mail-order businesses, he's building the click-and-mortar company, one hyperlink at a time, with help from a Wcb team of 50.

Like the physical store, the JandR.com virtual store sells 400,000 different items. It also hosts live chats with music stars, in addition to being the streaming site for New York jazz station WBGO. Last month, electronics giant Sony granted JandR.com special attention by picking it as one of the few online retailers it permits to sell its consumer electronics.

Getting through to the folks

Friedman's simple, unadorned office offcrs no clues that he is the boss's son. But his high-rise office view lets him see Exodus Communications' hosting facility across the river in Jersey City, N.J., where JandR. com's server farm with the InterWorld 3.0 online catalog and shopping cart is hosted.

This is a far cry from where

Web superstore

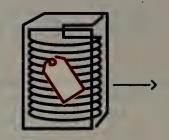
JandR.com is selling some 400,000 different items to online shoppers.



 A shopper visits the JandR.com Web site, which is hosted by Exodus Communications in Edison, N.J. The shopper browses through the Web catalog, based on InterWorld software, to look at items such as TV sets.



2 A customer service representative at J&R headquarters responds to the customer's e-mail inquiry about a certain item. Reps will soon be able to interact with customers using chat and computer telephony technologies. Also at this location, Web content managers update catalog items on the Web site.



3 The customer completes his order, which is stored in a Progress Software database at J&R. Shipping charges have been computed automatically using software from fulfillment house From 2.com, which has access to the database.



From2.com, based in Miami Lakes, Fla., arranges for the shipment of the item to the customer.

J&R was four years ago. At that time, Friedman was at law school, but as an avid Web user and erstwhile database programmer, he was growing restless, increasingly convinced

Launched three years ago, JandR.com has brought major changes in how J&R handled customer interaction and fulfillment.

For example, J&R's call center started handling customer e-mail inquiries, turning it into what is now known as a customer contact center.

It's been a struggle to assure all e-mail is routed to the right person and answered in a timely way, Friedman acknowledges.

J&R originally used a homegrown application to manage e-mail between customers and phone voice.

"This is opening up chat, and if we use it correctly, we can use it to upsell the customer," Friedman says.

While JandR.com would like to sell more by chatting up the fancy features in electronics and computers, the online store has refrained from pushing in-your-face automated Web advertising and marketing at online visitors.

"We bought the Net Perceptions [Web personalization] engine, but have yet to turn it on," Friedman says. "We still hear from the masses that

culator. It can determine the exact shipping costs anywhere in the world for any retail product sold on the JandR.com e-commerce site. The software works by adding a few lines of code to the online merchant's Web site.

International flavor

JandR.com plans to sell its electronics, music and computers in South America in the near future, Friedman says. So having this kind of dynamic cost-calculation is important for the online superstore.

tion Server from Transparent Language, which will translate Web e-commerce data on the fly from English to Spanish and vice versa. The software will be housed at the JandR. com server farm at Exodus in Jersey City, where it will serve on-the-fly translation and Spanish text catalog information to Web visitors.

Because of high rates of attempted fraud, one of the toughest problems at JandR. com has been managing credit card processing. That has meant carefully processing each card transaction manually, Friedman says.

This usually means voice verification for new customers. To speed up card processing and reduce fraud, JandR.com will also use the CyberSource fraud-screening service that rates risk based on a complex check of IP address, card validation, e-mail, country location and other factors.

For New York City residents, JandR.com is readying yet another service - one-hour delivery by courier of many of its online catalog products.

"It costs less to get it there that way to the customer than by Federal Express," Friedman says."We already do this for our store, and it seems to be in high demand."

and-mortar J&R and the clickand-mortar JandR.com is to expand into offering network products, primarily for small businesses. This will force the mom-and-pop e-shop to learn the ins and outs of business sales. But for the Friedmans, it'll be just another family affair.



Customer interaction and fulfillment have changed dramatically since JandR.com was launched, says Jason Friedman of J&R's retail firm.

tionize retailing.

built J&R into a company observers estimate brings in \$300 million in revenue per year, but who were largely oblivious to the Internet. However, he convinced them to let him forsake a law career to take the store online.

"I insisted we do this and started the Web site," he says.

ago, the retailer started investi-Friedman says this was hard gating several commercial ship management software products. "It's been a year of experimentation for us," Friedman notes.

> After several months of realworld testing, J&R settled on cSharc Communications, whose software has a common user interface for e-mail management, interactive chat and

the Web was going to revolu- the call center. But about a year those recommendations can be quite annoying."

order fulfillment and returns, JandR.com turned to a dot-com fulfillment house - where a Friedman cousin works — to handle the logistics of Webbased orders.

This fulfillment house, From2.com, in Miami Lakes, Fla., has software called Global Delivered Cost Cal-

"One of the main obstacles in international sales, other J&R has warehouses in than physical logistics, is getexplain to his parents, who Web-based customer relation- Queens, but to handle online ting customers a solid quote of what it will cost to send to their country," Friedman says. "Products have different international classifications, and customs classifies each product differently."

Language can also be a barrier. To tackle that problem, J&R is installing the Windows NT-based Enterprise Transla-

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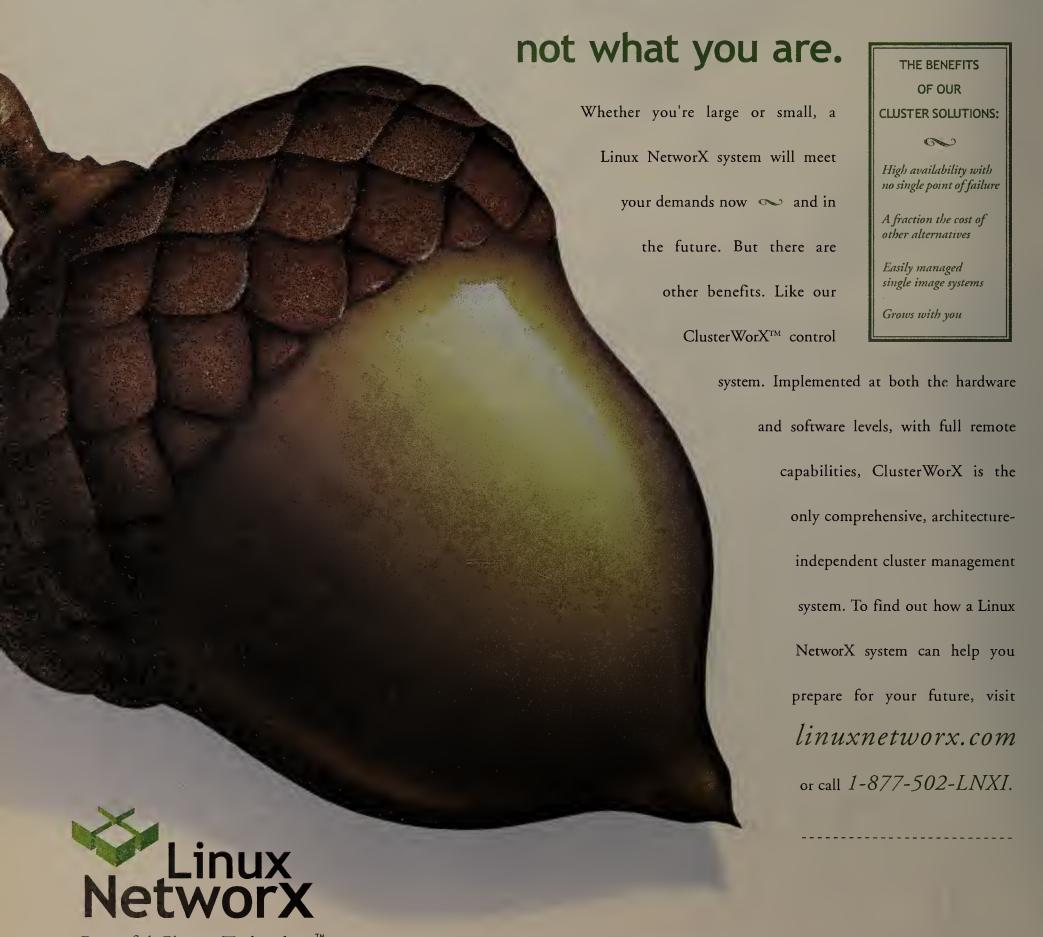
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Cisco bolsters low-end router family

Company's 2600 series gets 10-fold performance boost and ATM WAN links.

BY JIM DUFFY

NetDocuments of Orem, Utah, is partnering with AvantGo of San Mateo, Calif., to offer document delivery to mobile devices. Net-Documents users can view any document they have stored on the service via their Palm, Windows CE machine or Web-enabled phone. Users need only register with NetDocuments and add the corresponding AvantGo channel to their handheld device.

Briefs

NetDocuments: www. netdocuments.com;AvantGo: www.avantgo.com

Dot Hill Systems, comprised of storage vendors Artecon and Box Hill, unveiled enhancements to its storage management software. SANpath and SANscape will now work on Linux, HP-UX and Windows 2000. SANscape also supports NetWare. Both products work with Dot Hill's SANnet RAID storage arrays. SANpath 3.1's availability and performance management software allows storage space to be assigned to different servers on-the-fly without taking the system down. SANscape 2.3 is a configuration, maintenance and monitoring tool for Dot Hill's SANnet SCSI and Fibre Channel RAID storage systems. SANpath starts at \$10,000 per server; SANscape starts at \$500 per server. Both are available this month.

Dot Hill: www.dothill.com

Amdahl says it plans to deliver Intel IA64-based servers under the new brand name of Primergy next year. Primergy workgroup servers will start at \$1,799.

Amdahl's departmental server, the ES280, will include hot-plug features and start at \$2,949. The enterprise MS610 will feature four-way Xeon processors and a base price of \$6,399. The HS910 data center server can scale to eight processors and has a base price of \$23,999.

Amdahl: www.amdahl.com

SAN JOSE — Cisco unveiled two new low-end routers designed to help users better handle bandwidth-intensive and latency-sensitive traffic, such as Web applications and converged voice and data.

Cisco introduced two additions to the Cisco 2600 series of branch-office routers, the modular 2650 and 2651. These routers feature a performance boost of up to 10 times that of the existing 2600 line for customers requiring concurrent support for VPN services, broadband connectivity options, packet voice services and Web applications.

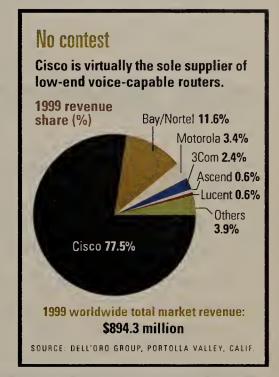
The 2650 and 2651 will go up against offerings from Nortel, 3Com and Motorola, but Cisco already has more than a 75% market share (see graphic).

The Cisco 2650 provides an autosens-

ing 10/100M bit/sec Ethernet port. The Cisco 2651 features dual 10/100 ports to support applications such as firewall and intrusion detection. Both platforms offer increased flash and dynamic RAM support for access control lists, routing tables and dual software-image back-up support for Cisco IOS software.

Equant has selected the Cisco 2600 series as one of its preferred customer premises equipment (CPE) offerings to support integrated voice and data over IP services.

Also announced were two broadband network interfaces: DS-3/E-3 ATM for Cisco's 2600 and 3600 router lines, and OC-3 with circuit emulation services for Cisco 3600 series routers. These modules are designed to help customers deploy high-speed WAN services to their branch See Cisco, page 26



NTP software regulates Windows storage resources

BY DENI CONNOR

MANCHESTER, N.H. — Management utility vendor NTP Software this week will unveil policy-based storage management software that lets net professionals easily plan, monitor and control storage utilization and capacity on their enterprise nets.

The software, called Storage Sentinel 2000, includes the capability to show how much disk space is available on storage arrays and disks and how well that data is being used. The package lets customers

create policies that govern the amount of disk space allocated to users on the network or execute processes that protect the network. For instance, Storage Sentinel can detect when a suspect Visual Basic script file from an e-mail has been saved to a drive and prevent the proliferation of the file to other servers or directories.

"To use the hard disk space in the best way I can without buying new hard disks, I need a quota manager to allocate space for the personal directories of each of my users," says an administrator at grocery chain Conad, in Bologna, Italy, who requested annonymity. Conad has six Windows NT Servers in an NT File Systems partition with 200 local users and 600 users in remote locations. With Storage Sentinel, he can set storage quotas automatically and monitor when disk space is filling up.

Storage Sentinel runs on any Windows NT or 2000 server and is managed from an NT workstation. Sentinel monitors and controls the capacity and disk utilization of external storage whether on the network, attached locally or remotely to servers.

Network managers can implement policies systemwide or selectively with Storage Sentinel 2000. For instance, you may want everyone in a group of users to have access to a certain amount of disk space for their personal files. You can deny users in the accounting department access to payroll records but let the payroll clerk in the same department have access.

NTP plans to extend Storage Sentinel 2000 to Solaris and Linux by year-end.

To establish policies, network managers use a template to point and click on options. This interface appears to the user as a dialog box containing a variety of

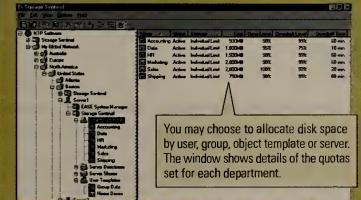
objects that can be selected. Once the template is created, a script executes it. For simple environments with few servers, built-in reports exist. For more complicated configurations, the data can be saved to several common file formats for import into other applications. Information gathered by Storage Sentinel can be fed to Tivoli Management Environment and CA-Unicenter TNG.

Storage Sentinel 2000 will be available this month for \$1,500 per server and \$125 for each workstation.

NTP Software: www.ntpsoft ware.com

NTP's Storage Sentinel 2000

Storage Sentinel 2000 lets network managers assign disk quotas to Windows NT and 2000 systems.



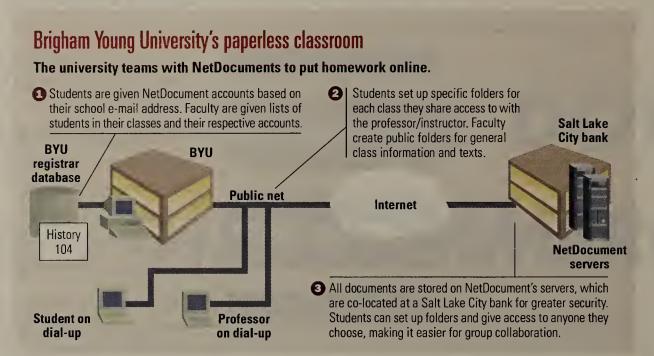
BYU e-business school looks to go paperless

BY JASON MESERVE

Remember the good old days of college? Lugging books, typing papers, taking notes. One needed a pretty hefty backpack to move that stuff around.

At Brigham Young University in Provo, Utah, some students are putting the backpacks away and just carrying PDAs and laptops, helping create a paperless campus. This summer the Mormon university started a pilot service within the school's e-business center in which all the class information and student homework is submitted and stored online.

BYU is partnering with Net-Documents of Orem, Utah, to offer the service to students and faculty, says Dr. Owen Cherrington, director of the master's program in information systems. One class is test-



ing the service during the summer semester at the school, and Cherrington says he hopes to introduce the service to

more classes in the fall.

The process begins when students enter a class using the service, they are given a NetDocuments user name. Using a Web browser, students and faculty set up their folder system for storing and sharing homework. Each student creates a specific folder for the class they're in and provides sharing rights to the instructor and any teaching assistant that may be grading the homework.

"Digital signatures can be put on a homework after it has been graded to prevent manip-

ulation in the future," Cherrington says.

Because it is browser accessible, students do not have to be on campus to access their account. They can also share information in their account with people outside of BYU or set up folders to share information among a group of peers working on the same project.

Students can get the service for free up to the first 10M bytes of storage. A 100M-byte account costs \$5 per month. NetDocuments is donating free premium accounts (those with

more than 10M bytes) to the school for use by faculty and staff. "Students are required to use the system; this is not an option for them," Cherrington says. "They have to get on the Internet and get on the service to get access to course information and turn in assignments. This helps prepare students to move into a heavy e-commerce environment [when they graduate]."

Despite the possible \$5 per month charge, Cherrington says the service is still a value to the students, who would normally have to pay for a photocopied packet of class information available at the copy center. Now the same information is available directly on the Web.

For BYU, there is no hardware to buy or software to install. The NetDocuments data center, which runs on an NTbased Dell server and some Unix boxes, is housed at a bank for greater physical security. BYU's programmers are developing a system that will give faculty members a list of students and their account names when the semester starts to help make it easier to set up the file sharing that is necessary.

The one drawback to the service for the students: They can't claim their dog ate their homework.

3Com, Extended to provide **Bluetooth for Windows**

BY PETER SAYER

3Com and Extended Systems last week publicly announced a deal to code-Bluetooth wireless velop technology for Microsoft's Windows platforms.

Under the terms of the agreement, the companies will cooperate to deliver a suite of Bluetooth data management applications, protocol stacks and hardware adapters to businesses and OEM customers as well as consumers, 3Com said at the third Bluetooth Unplugfest meeting in France.

Bluetooth is an evolving standard that uses low-power radio technology to enable ad hoc networking between portable devices over a distance of up to 10 meters and at speeds of up to 700K bit/sec.

3Com will use Bluetooth hardware and the jointly developed Windows software suite to offer end users a product for synchronizing and managing data between PCs and Bluetooth-enabled mobile devices.

Extended Systems will pro-

vide PC and handheld device manufacturers with Windows development kits, protocol stacks and data management applications.

The deal will mean "immediate compatibility between personal computers enabled by 3Com's Bluetooth offerings and Palm handhelds," says Rick Maule, vice president and general manager of 3Com's Mobile Connectivity Division.

The Bluetooth Unplugfest is organized by the Bluetooth special interest group, which brings together 1,883 developers, manufacturers and integrators of Bluetooth products.

3Com: www.3com.com; Extended Systems: www.extended systems.com.

Sayer is a correspondent with the IDG News Service.



Cisco,

continued from page 23

offices and enable migration to packet voice infrastructures, Cisco says.

Support for high-speed services and ATM quality of service make these modules appropriate for multiservice applications, Cisco says.

Also, fractional DS-3/E-3 access services up to 45M/34M bit/sec enable service providers to offer incremental increases in bandwidth to their customers without swapping CPE hardware or physical connections, the firm says.

Both the DS-3 and E-3 ATM modules support AAL-5, the ATM Forum-compliant framing standard that adapts packet data to ATM cells. They also support ATM traffic management classes, such as variable, unspecified, available and constant bit rate, Cisco says.

The OC-3 circuit emulation module lets enterprise and service provider customers gain access to Layer 3 services without being required to connect a separate router to their ATM access multiplexers, Cisco says.

Analysts say the new routers and router modules will help Cisco maintain its market share dominance in low-end routing. Yet the absence of ATM AAL-2 capabilities -- which are used for voice at less than 64K bit/sec — in Cisco's new gear could give the company's rivals an appealing differentiator.

"Nortel can continue stressing that its Passport branchoffice series already supports AAL-2 and that the series' ATM and digital voice capabilities have already been proven in production networks," says market researcher CurrentAnalysis in a recent report on the 2650 and 2651 routers. "Companies will need to emphasize the importance of maintaining alternate suppliers within the traditional branch-office routing market."

The Cisco 2650 and 2651 and the ATM OC-3 and DS-3/E-3 modules are available now. Pricing for the routers starts at \$3,295. The ATM OC-3 module starts at \$7,500 and the DS-3/ E-3 board starts at \$6,000.

A Cisco IOS firewall software option costs an additional \$1,200 and is available now.

Cisco: www.cisco.com





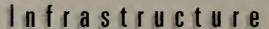
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to www.foundrynetworks.com/nw1 to formulate your own opinion.





Wired Windows . Dave Kearns

DIRECTORIES REMAIN A GREAT MYSTERY OF LIFE

y readers frequently ask how to explain the importance of directory services to management. I've also been asked the same question (how to explain the importance of directory services to business executives) by directory service vendors.

I recently went to The Burton

Group's Catalyst conference to see if someone else had devised a good, reasoned argument for the importance of directory services. I discovered the problem is even bigger than I thought. While I expected to find users, managers and programmers from the business sector who didn't understand, I was shocked to see even directory service vendors and other software vendors were just as clueless.

At least the attendees admitted they didn't know enough about directory services — that's one of the reasons they came to the conference. As one stated, "I've worked with databases for 30 years and directory services for 30 days."

There were some who understood — such as Radiant Logic's Michel Prompt, the folks from OpenNetwork and Archi-Tect, and Microsoft's Peter Houston. The Burton Group, especially Jamie Lewis, Phil Schacter and Dan Blum, also understand. But too many of the presenters showed a remarkable lack of knowledge of the importance of directory services and how directory services are being used in today's networks.

Both Microsoft and iPlanet had trouble seeing beyond their products into the heterogeneous mix of directories most firms are using and will use for the foreseeable future.

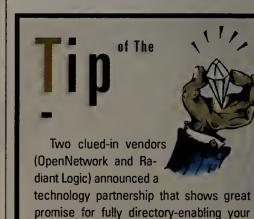
A number of Web-based security vendors continue to use their own files and databases to store policies needed throughout the network — one of the big strengths of a directory. They seem to feel that an encrypted text file is more secure than the directory!

Even executives from vendors of directory service products, such as Oblix's Gordon Eubanks, had trouble grasping the concept of distributed, virtual directory services.

And Novell, arguably the granddaddy of directory services vendors, sent its new chief information officer not to explain the directory but to tell bad jokes about his trials and tribulations installing the directory.

So don't feel guilty that you're having trouble explaining it to your execs — even those whose business it should be to understand have trouble understanding the directory revolution.

Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at wired@vquill.com.



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Carriers & ISPs

The Internet, Extranets, Interexchange and Local Carriers, Wireless, Regulatory Affairs

Briefs

Fixed-wireless telecom services are coming to the world's 10th-tallest building. WinStar Communications announced an agreement with commercial real estate operator Blackstone Group to provide voice, data and conferencing services to Chicago's Aon Center, formerly the Amoco Oil Building. The Aon Center rises 80 stories to a height of 1,136 feet near the Lake Michigan waterfront. WinStar's agreement with Blackstone also includes 25 other buildings in the metro areas of Boston, Dallas, Detroit, New York, San Francisco and Washington, D.C.

WinStar: www.winstar.com

Leading ISP EarthLink
announced the expansion of its
business-grade Biz DSL service
to 10 additional cities, bringing
the total to 14. EarthLink Biz DSL
is a symmetrical offering with
identical upstream and downstream speeds, offered in a range
of 144K bit/sec to 1.1M bit/sec.
The service is newly available in
Boston, Chicago, Cleveland,
Denver, Houston, Phoenix,

Seattle and Washington, D.C. EarthLink: www.earthlink. net/business/dsl

Sacramento, Calif., San Diego,

Vectris Communications, a DSL wholesaler, entered the retail DSL market earlier this month with a suite of Internet services aimed at small and midsize businesses in secondary markets in the central U.S. The Vectris offerings include DSL connectivity and applications such as e-mail and domain name services. Vectris offers services in 39 Texas cities and is expanding into Arkansas, Illinois, Indiana, Kansas, Michigan, Missouri, Ohio, Oklahoma and Wisconsin. By fall, Vectris plans to serve more than 150 cities.

Vectris: www.vectris.com

Cabletron spinoff touts easier VPNs

BY PHIL HOCHMUTH

he headaches involved in setting up a VPN are similar to making wedding arrangements— extensive planning and coordination with multiple vendors, plus a million things that can go wrong. Global Network Technology Solutions (GNTS) wants to make VPN rollouts more like making dinner plans for two.

GNTS, a network integration firm spun out of Cabletron's former services division, is offering a VPN implementation service to help firms install site-tosite and dial-up VPNs from start to finish.

The keys to GNTS' services are its partnerships with UUNET and AT&T to provide VPN services to customers, and VPNet for its VSU line of gateway products, says Ted Watson, program manager for GNTS'VPN business.

On top of wrestling with complex VPN technologies, many customers who install VPNs on their own can get bogged down in coordinating the delivery of VPN equipment and an ISP's services, Watson says. This can cause a sound project plan to languish with delays and technical problems.

"Customers say the reasons they want to deploy a VPN is to save money and strengthen their networks," Watson says, "but if it takes 18 months to do it, they haven't gained anything."

The VPN services market is expected to grow from \$5.1 billion to almost \$40 billion by 2004, according to Infonetics Research in San Jose.

Infonetics also says in four years customers will spend almost 10 times as much on VPN services as they will on equipment.

GNTS' VPN consulting service costs \$3,125 per site for site-to-site or extranet VPN installations, not including VPN equipment or Internet service. Included in the price are site evaluation and project planning services, on-site assistance with equipment installation and configu-



ration, as well as post-install support and monitoring services. Individual VPN enduser installation costs \$39.95, which includes VPN client software from VPNet, a dial-up account from UUNET or AT&T, and set up assistance from GNTS.VPN services from GNTS are available now.

GNTS: www.globalnts.com

Quickening broadband rollout is bad news for Bells

The FCC found that the number of

A real live market

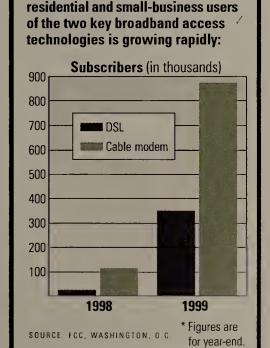
BY DAVID ROHDE

WASHINGTON, D.C. — Good news on the number of Americans embracing broadband access technologies is turning out to be bad news for the regional Bell operating companies as they attempt to free their data services from regulation.

According to a Federal Communications Commission report, about one million residential and small-business users now subscribe to broadband access services such as cable modems and DSL, nearly triple the count from a year earlier.

The FCC produced the report — which Congress requires the agency to provide once a year — to determine whether the national rollout of advanced telecom services to the mass market is "reasonable and timely." If the FCC says it isn't, the Telecommunications Act of 1996 requires the agency to remove certain "regulatory barriers" to broadband data deployment.

The two biggest RBOCs, SBC Communications and Verizon (the merged Bell Atlantic and GTE), say such an action would have to include letting the RBOCs carry data traffic past local calling boundaries even before they win state-by-state



authority for all long-distance traffic. That would let them for the first time become Internet backbone providers.

However, in this case, the FCC said in its report that current broadband deployment is indeed "reasonable and timely." That means the RBOCs' data-carriage restrictions will remain except in Texas and New York, where the FCC has specifically certified SBC and Verizon as long-distance carriers.

The FCC report carried another piece of potentially discouraging news for the Bells. Pointing to past market research reports, the RBOCs have boasted that they have installed the majority of the nation's DSL lines despite the rise of independent DSL carriers. But the FCC report indicated the main driver of broadband access isn't DSL but cable modems. Especially in the residential sector, cable modems are enjoying a strong head start in user acceptance (see graphic).

SBC and Verizon have pushed for longdistance data deregulation largely by providing funding to a lobbying group called the Internet Advancement Coalition (iAdvance). Following the FCC announcement, iAdvance Executive Director Martin Machowsky criticized the study's method-

See Broadband, page 32

Global network will provide private data, voice

BY MICHAEL MARTIN

ENGLEWOOD, COLO. — Internet-based VPNs may be all the rage, but

Quantitude of Englewood, Colo., is gambling that many multinational firms will prefer a true private network to the Internet model.

Quantitude, a wholly owned subsidiary of travel reservation system provider Galileo International, is in the early stages of introducing a global IP network that will provide voice and data services to multinational companies.

Ruth Chatterton, a senior consultant with TeleChoice in Boston, says many large companies are mixing Internet VPNs with more private networks.

"The companies that have a real problem with security might go with a private service," she says. "VPNs are pretty secure, but private networks are marginally more secure."

Chatterton says a private network could also benefit companies with multiple data centers and a need for lots of bandwidth in between, because the private network might be cheaper than an Internet-based service.

Ron Thornhill, Quantitude's president and CEO, says the company's new IP network was originally designed to replace the legacy, multiprotocol network used by the 40,000 travel agents who rely on Galileo. But Galileo recognized there was a demand for private network services from multinational firms and decided to sell space on the new reservation network to outside companies as well.

"A lot of companies are looking to get the benefits of the Internet business model but keep the security and predictable end-to-end management associated with the private network," Thornhill says.

When completed in approximately three years, Quantitude's network will have 300 city hubs in 107 countries. Cisco BPX ATM switches and MGX ATM edge switches will let Quantitude run Cisco's implementation of Multi-protoeol Label Switching to ensure quality of service, Thornhill says.

Initial services available over the network will be data and on-network voice. Quantitude is working on adding off-network voice.

Quantitude will manage the network end-to-end and provide the customer premises equipment necessary to connect to it. The firm will work with others that don't have Cisco networks, he says.

Quantitude has installed equipment in Denver, Chicago, New York, Detroit, Washington, D.C., and Los Angeles.

Quantitude: www.galileo.com

Broadband, continued from page 31

ology. In a statement, Machowsky accused the FCC of failing to "act boldly to ensure that all Americans have access to advanced telecom services."

IAdvance critics have charged that RBOC long-distance authority has nothing to do with how fast the Bells introduce high-speed Internet access on a local level.

Although the FCC announced the results of its study, the full text will not be available until later this week, when it will be posted on the FCC Web site at www.fcc.gov.

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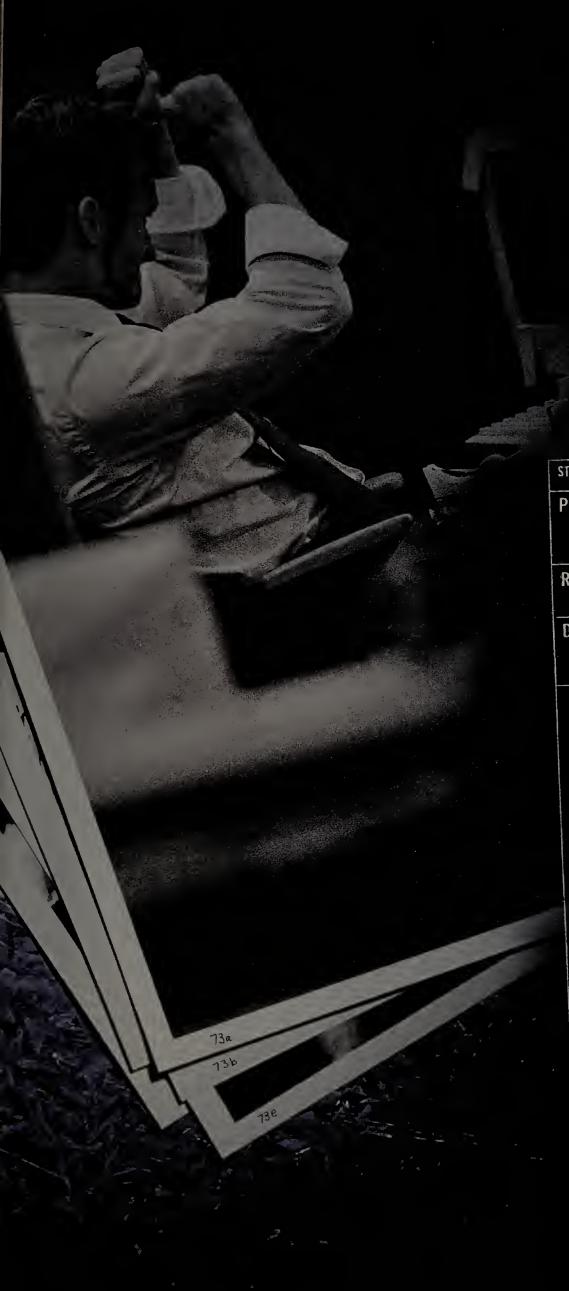


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Eye on the carriers . David Rohde

Trouble in SLA monitoring paradise

any users have made the acquaintance of Visual Networks, a Maryland company that embeds specialized protocol analyzers

in its DSU/CSUs to collect information on network availability, throughput and delay. The idea is to give network managers a picture of how well carriers are

living up to service-level agreements, and to help determine optimum port and circuit sizes. Other vendors provide similar tools, but Visual Networks has been a standout for two reasons.

One is that its Visual UpTime system is highly respected, judged "timely and incredibly accurate" by our reviewer (www.nwfusion.com, DocFinder: 9428). The other is that several carriers base their value-added frame relay services — such as AT&T's Frame Relay Plus and WorldCom's Circuit View — on placing Visual boxes on customer premises to feed traffic information into database servers and produce custom reports on network performance.

So it's stunning to see what a horrible year Visual Networks is having. In February it bought Avesta Technologies, the latest of several acquisitions to move Visual into service-level measurement for IP networks and the applications layer. Visual knew integrating Avesta was a challenge, but things got so bad that in June, CEO Scott Stouffer had to lower his revenue projections to Wall Street through year-end 2001. Visual's stock promptly collapsed to \$11 per share, down from a high of \$87.50 in March.

Then Visual was hit with a shareholder lawsuit charging Stouffer sold nearly half of his personal holdings while failing to disclose Visual's integration problems soon enough.

But this is an acquisition-gone-wrong story with a twist. It turns out the problem isn't really in lack of focus in the acquired firms' products. It's with the legacy offering Visual UpTime. Although several frame relay carriers sell Visual UpTime, Stouffer says Visual has always had to engage in its own "demand creation" with users. That's a fancy way of saying it takes some doing to convince people to pay extra to the carriers just to verify they're doing their job right.

Training sales representatives on Avesta distracted them from Visual UpTime "demand creation," Stouffer told analysts. Later he told me the carriers still retain a voice heritage, forcing Visual to stay ahead of their moves toward specialized data sales.

Stouffer claims Visual isn't suddenly losing sales it should be winning, but there's no denying competition from Paradyne's FrameSaver DSU/CSUs and NetReality's WiseWAN probe. Lucent's acquisition of International Network Services gave it an acclaimed package called VitalSuite with transport- and applications-based monitoring tools.

As for the shareholder lawsuit, Stouffer says his personal stock sales were part of a normal long-term pattern of portfolio diversification, and Visual says the suit lacks merit. Finding a company with disgruntled shareholders may be no surprise today. But I remember seeing projections that half of all corporate WANs would include value-added managed elements from the carriers by now. It appears that day has yet to come.

Robde is managing editor of The Edge section of Network World. He can be reached at drobde@nww.com.





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Why the wireless players covet 700-MHz spectrum

BY DENISE PAPPALARDO

ith the promise of high-speed wireless data nipping at our heels, one may wonder why much of the wireless industry is jazzed up about the pending 700-MHz spectrum auctions.

It's true that many mobile wireless service providers are offering Internet access via handheld devices, and fixed wireless service providers are offering 1.5M bit/sec access to the Internet. However, mobile wireless data services top out at 14.4K bit/sec, and fixed wireless access is only available in about five cities.

The industry is pushing toward third-generation (3G) wireless specifications offering data and voice services that support 384K bit/sec up to 2M bit/sec in three to five years. Many wireless service providers are working with antiquated networks, and it's not only the traditional wireless companies that want a piece of the action.

Hence the need for more spectrum. The Federal Communications Commission has been preparing to auction large chunks of spectrum in the 700-MHz band for some time. Congress expected an estimated \$10 billion in auction proceeds to be on hand by the end of September. However, two issues have plagued the FCC and played a big part in the organization's decision to postpone the auction from Sept. 6 until March 6, 2001.

The first issue involves the fact that broadcasters are already using the 700-MHz spectrum for analog television transmissions and will continue to use it for some time, regardless of ownership.

There is no plan to move broadcasters off that spectrum until their agreement with the FCC expires in 2006.

The second issue involves the fact that the FCC is scheduled to auction several personal communication services (PCS) licenses in November, says Brian Fontes, senior vice president for policy and administration at the Washington, D.C., trade group Cellular Telecommunication Industry Association (CTIA). PCS licenses that were returned to the FCC due to lack of payment or bankruptcy will be auctioned. It wouldn't make sense for most wireless service providers to bid on 700-MHz spectrum in September without knowing if they could have expanded existing networks with PCS licenses in November, Fontes says.

Now the wireless industry has six more months to prepare. While some service providers are only looking at the PCS or 700-MHz auctions as filler for existing networks, many more are looking at the spectrum as a road to building third-generation networks and services.

UPCOMING 700-MHZ AUCTION

Auction delay unlikely to dampen enthusiasm for what experts call a key to next-generation services.

For example, AT&T Wireless has an older cellular network and has less unused spectrum than newer wireless service providers such as a Sprint PCS, says Callie Nelson, research analyst at IDC, a Framingham, Mass., consulting firm.

"A lot of PCS players have 15 MHz of spectrum that is not in use, while cellular carriers are pretty much maxed out," Strategis' Hamilton says.

Without additional spectrum, some carriers will have a hard time upgrading to third generation, he says.

> While service providers need more spectrum, 700 MHz offers additional benefits. "The spectrum is better than PCS because it has good [radio frequency] propagation," Hamilton says. That means service providers will have to deploy fewer cell sites because 700 MHz is lower in the cellular frequency and can support high-quality transmissions

between cell sites that are separated by greater distances than is possible with PCS cell sites.

The new 700-MHz networks should be less expensive to build than PCS networks. But it will be some time before users can purchase services that run over the 700-MHz spectrum. For starters, most auction winners will hold out for network equipment that supports the third-generation specifications, and that equipment is not readily available.

Even if the equipment were ready and the auction winners were able to start building networks in April or May 2001, there is still the issue of broadcasters using the 700-MHz spectrum.

While service providers such as AT&T

Wireless and Verizon Wireless would not say if they would bid in the 700-MHz auction, all three signed the CTIA's letter urging the FCC to postpone the auction primarily because of existing broadcasters using that spectrum.

The broadcasters are looking at this situation and saying "How much money can I get out of you to move off this spectrum before 2006?" says an AT&T spokesman. "If broadcasters blackmail the 700-MHz auction winners then 3G is going to cost even more."

Likely 700-MHz bidders include AT&T Wireless, Nextel, SBC Communications and possibly WorldCom. But Hamilton says he expects to see a lot of partnership bidding taking place.

"Because the spectrum will be used for wireless data applications there is a lot of interest from Internet computer companies, but these companies don't want to go it alone, so they are looking to wireless partners," he adds.

But before those partnerships are made public, the Microsofts, Intels and Dells will probably want to wait and see if the FCC keeps its March 6 date.



The 700-MHz spectrum includes the 747- to 762-MHz and the 777- to 792-MHz bands. The FCC will auction the bands in large geographic chunks that cover, for example, the entire West Coast or central states (see graphic).

While the geographic range is desirable, other factors are also fueling interest in the auction. Service providers are facing the daunting task of upgrading networks to support third-generation wireless specifications, says Elliot Hamilton, a senior vice president at Strategis Group, a Washington, D.C., consulting firm.

"[700 MHz] is not the official 3G spectrum, but most people are looking at it as the de facto 3G spectrum because it's the only band, in the foreseeable future, that wireless carriers can buy to build nationwide networks," Hamilton says. "And 3G is the most viable application you can support over the spectrum."

Service providers like the idea of the new spectrum, especially in the lower spectrum bands, he adds.



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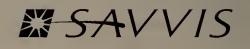




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Briefs

Splashnet.com of Fairfield, N.J., has released a hosted application for sales force automation that costs \$50 per month. The application, designed for use by small to midsize businesses, lets sales representatives remotely access information on customer contacts or task assignments, as well as sales presentations.

Splashnet.com: www.splash net.com

Applicast has released FastPack for mySAP.com and FastPack for Siebel eBusiness Applications to meet the needs of companies looking to implement hosted business planning and e-business tools quickly.

FastPack for mySAP.com includes three industry-specific versions for the manufacturing, distribution and service vertical markets, and can be implemented in a minimum of six weeks. FastPack for Siebel can be implemented in as few as four weeks.

Pricing for FastPack for Siebel eBusiness Applications ranges from \$20,000 to \$25,000 per month, based on 20 to 50 users. FastPack for mySAP.com costs between \$17,000 and \$29,000 per month based on 10 to 25 users.

Applicast: www.applicast.com

Dirig Software of Nashua, N.H., last week announced RelyEnt, software for monitoring and managing the performance of messaging, database and Web server applications. RelyEnt sits on a Windows NT/2000, Linux or Unix server, and through an SNMP interface, deciding if applications are performing at acceptable levels. If not, the software alerts IS staff through a browser-based graphical interface or takes action to correct a problem, such as rebooting a server, itself.

RelyEnt starts at \$900 and is available now.

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Management service providers unite

MSP Association leader sheds light on emerging market.



A new breed of companies called management service providers (MSP) has emerged

to address the needs of companies looking to outsource network infrastructure management in light of the current IT hiring crunch and the need for companies to focus more of their internal IT staff on efforts such as e-commerce. Network World senior writers Marc Songini and Mike Martin recently spoke with Linda Shannon-Hills, a Hewlett-Packard official who has been named to head the MSP Association, a new forum for management service providers and their suppliers.

What exactly will the MSP Association do?

Help educate and make the industry aware of what MSPs are, and the value and benefit they can provide to customers; create best practices; set some standards; look at the MSP industry's direction; and do research and share this information. We'll look at [technology] functions that there need to be — like providing a tool to allow the MSP to put a portal on a customer site and customize it for reporting on the performance of the customer's system. [The portal could be used to] provide business reports and tell customers what kind of sales transactions they are getting from their Web-hosting server and things like what the hit rate was.

How do you define an MSP?

It delivers IT infrastructure management services over a network to multiple customers on a subscription basis. An MSP



can provide security or storage management, which may not be an application but a best practices method, and the technology resources [enabling it]. See MSP, page 40

Asset management moves to the Web

BY MICHAEL MARTIN

GREENVILLE, S.C. — Datastream Systems, a provider of enterprise asset management software geared toward the manufacturing industry, is getting ready to offer its wares as a hosted application service provider offering.

The service, known as MPXconnect, will cover software, hardware and support, letting companies avoid the costs associated with deploying and maintaining an asset management product inhouse, Datastream says.

MPXconnect is designed to scale to the needs of any enterprise user and tie together maintenance and procurement software. The offering contains a range of modules including:

- Asset management lets users track asset histories and relationships.
- Work management enables planning and scheduling of work orders.
- Materials management maintains a material inventory.
- Inspection management helps plan and execute maintenance work.
- Project management lets users map a project's progression.

- Purchasing management generates purchase orders.
- Budget management monitors internal and external resources.
- Reports management maps capital assets and staff resources.

requirements include: Internet Explorer 4.0 with Service Pack 2 or Netscape Navigator 4.05; Windows 95, NT 4.0 or Macintosh; and Adobe Acrobat Reader 4.0. Datastream recommends a standard Internet connection to its hosting center. Companies are

www.nwfusion.com ASP CONNECTION Dig in to the MPXconnect modules. Read a white paper on the technology. Subscribe to our ASP newsletter.

responsible for their own Internet connections to the data center. Datastream recommends a minimum of 16K bit/sec connectivity for each MPX connect user.

The data center has two OC-12 connections and an OC-3 connection, each delivered by different service providers for redundancy and 24-7 network monitoring. MPXconnect sits on Sun Enterprise 4500 servers running Solaris. Security is provided by a Check Point Software's Firewall-1 and the Cisco NetRanger intrusion-detection

Houghton Leroy, director of consulting with ARC Advisory Group in Dedham, Mass., believes enterprise users will see more asset management vendors moving to the ASP model.

"Enterprise asset management is a powerful application and lends itself to a hosted environment," he says. "All you're really doing is generating orders and populating a database, so there's no need for it to stay in-house."

Firms with several branch offices should find hosted enterprise asset management products particularly attractive, Lcroy says.

Opus360 software, service target IT staffing

Company's suite of 'Net-based tools evaluates staff skills, automates the creation of job descriptions, manages staffing projects.

BY CAROLYN DUFFY MARSAN

NEW YORK — If you're having trouble finding, deploying and retaining network engineering talent, you may want to consider the latest work force management offerings from Opus360.

Just 2 years old, Opus360 has attracted an impressive list customers including Lucent, BEA Systems, PricewaterhouseCoopers and Computer Sciences. These companies use Opus360's suite of Internet-based tools to manage the staffing process for IT projects.

Opus360's goal is to help IT departments reduce their staffing costs by providing a more efficient system for filling open jobs.

"We have a tremendous talent shortage, and we have more companies chasing this talent," according to Keith Widyolar, director of public relations at Opus360. "For IT

PROFILE: OPUS360

New York
Internet applications and services for managing project-based work forces.
1998
Ari Horowitz
For the first six months of this year, the company had revenue of \$3.3 million and a net loss of \$45 million.
300
Opus360 also runs the FreeAgent.com portal, which matches employers with independent contractors.

managers who have to service projects, the issues are: How do I get the people? How do I keep the people? How do I get my projects done?"

Flagship product

Opus360's flagship product is Opus RM, an intranet application for evaluating staff skills and availability, and for matching the right people to a particular project. Opus RM automates the creation of job descriptions and handles the

process for getting new positions approved.

An add-on procurement capability lets customers build an extranet with preferred professional services and staffing firms for posting and filling job openings. The software tracks metrics such as how fast staffing firms fill jobs and which firms can find people with hard-to-find specialties.

Opus RM is available as a hosted application or a software license. A new Unixbased version of the software that ships in September runs on BEA Systems' Weblogic application server Oracle's database. (Previous versions supported Windows

The software costs \$950 per user plus a 1.5% transaction fee for the procurement component.

Web site help

Companies that aren't able to fill their staffing needs internally or with preferred suppliers can tap two Web sites run by Opus360:

- Opus Xchange is an open Internet-based exchange for professional services that lists more than 10,000 projects posted by 1,000 participating companies.
- FreeAgent.com lists 150,000 independent professionals that companies can use to fill temporary staffing needs. About 19,000 people with network skills are listed

on the site.

One company that is using the whole suite of Opus360 offerings is CTG, an IT consulting firm in Buffalo, N.Y.

Last year, CTG began looking for an internal staff resource management system and skills repository that would work with emerging Internet exchanges. The company chose Opus RM and joined the Opus Xchange.

"Opus360 lets us look at our bench and fill critical needs directly," says Gregory Turner, managing director of CTG."We can cover more customers and offer them the ability to tap into our pool of resources."

This week, CTG begins a month-long test of Opus RM. The company put its internal resources in one region online, and a large customer in that region will conduct all of its transactions using Opus RM. In September, CTG plans to install the new Unix/Oracle version of Opus RM across the rest of the company.

continued from page 39

Potentially, [MSPs may offer] service-level agreements and service-level management, as well as other process improvements.

All MSPs have to utilize the infrastructure of the Internet to provide service. In some cases, we've got partners that have been doing it more than two to three years calling without themselves MSPs.

Are you finding customers confused by having another 'SP' acronym out there?

There's ISP, ASP and what's the new xSP of the week? That's very confusing for the customers, and the analysts are trying to better understand so they can help guide their customers.

Why has the MSP come

along now?

The utility model has just taken on a lot more interest. And the capabilities of the Internet have helped.



does the emergence of MSPs mean for management application software vendors?

There's an opportunity for a lot of partnerships. We [application vendors] bring the technology to the MSPs, and

they bring the best practices resources to customer.

Do MSPs compete with inhouse IT staffs?

The MSP helps allow an IT staff to focus on a higher

level of development for its business organization to be more competitive. The MSP takes on the role of handling the day-to-day operational tasks, providing the IT staff with the information to make business decisions. Many companies are struggling to get the resources to effectively do this.

customers drawn to MSPs?

I'd say the primary area is going to be midmarket, but there's growing interest by small companies and global ones. [Interest from] financial institutions has been very strong; we've also seen a lot of dot-coms and start-ups because of the low entry

MSP Association at-a-glance

Define best practices, educate the public and sponsor research for the emerging management service provider marketplace.

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19 founders, including startups such as InteQ and Silverback, as well as established network management software vendors such as Candle and Hewlett-Packard.

Chairwoman: Linda Shannon-Hills, HP's

service provider program manager for OpenView

For more info: www.mspassociation.org

Are there particular types of [price]. To set up an IT security. It's still new, and department or continue to expand it and stay up on the technology is in some cases a high capital expense. [With an MSP] there's reduced risk - if they sign up for a oneyear contract and it doesn't work out, they can easily switch to another company. They get a quick return on

the investment.

Small to midsize businesses might even adopt multiple MSPs, whereas the global companies might just take a segment of their IT and partner with an MSP.

Where are customers finding the biggest need for MSPs?

It's across the board: performance, network and system management, and storage. There's also some interest in

there's a lot of opportunity to grow.





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remote access Until them from their workstations, and watch their productivity soar. We offer secure remote access solutions that make it easy to get on the network from outside the office. For the flexibility they want, and the productivity you need. Because it's hard to think outside the box when you're working in one.



Enterprise Applications

ASP NetLedger upgrades accounting package

BY JOHN COX

SAN MATEO, CALIF. — NctLedger has unveiled the latest version of its accounting software, which was designed from the outset to be delivered as an Internet service accessed via a Web browser.

Key changes in Version 4.0 of the application service provider's (ASP) software-based service include a new payroll program that handles paychecks, withholdings and W-2 forms and lets users tailor reports to meet their needs. For the first time, a company using NetLedger can give outsiders, such as customers, business partners or an outside accounting firm, access to its NetLedger data. Customers can view and pay invoices online, for example.

The ASP says it has signed up about 20,000 customers since launching its

ASP bets on Linux

NetLedger's data center hosts the company's Internet-accessed accounting software on 500 twin-processor Linux servers from VA Linux Systems.

services last September. These customers pay at least \$4.95 per month per user for the basic accounting software. The new NetLedger Payroll program costs an additional \$4.95. Other services also carry fees; online customer ordering, for instance, costs \$19.95 per month for unlimited orders.

NetLedger is one of a group of ASPs that offers software designed from the outset as a Web service. Traditional software vendors are moving aggressively into the ASP market, either by building browser front ends to their client/server packages or granting remote access to their software via third-party software such as Citrix Systems' MetaFrame.

The NetLedger uscr interface is pure HTML, which typically lacks the speed and interactivity of a Windows application. But the NetLedger interface, and overall design of the application and underlying systems architecture, have been built for extremely fast interactions, company officials say.

"With an Internet application, we had to move the whole [user interface] over the Internet, one page at a time," says Chris Blum, NetLedger co-founder and director of quality assurance. "It had to be very lightweight, so it was fast enough for the users."

The server side of the application, written in Java and Java Server Pages,

relies on the Oracle 8i database to store and manage the accounting data for cach customer. Several of NetLedger's founders are from Oracle, with Oracle Chairman Larry Ellison listed as an investor.

The accounting application and the database run in a data center in San

Matco. NetLedger is building a second data center in New York, to share the growing workload. Both sites will maintain a copy of all customer data so if one fails, the data will be safe and users can be redirected quickly to the operating data center.

NetLedger: www.netlcdger.com



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Enterprise Applications

'Net Insider . Scott Bradner

A LIBRARY IS NOT A BOOK MUSEUM

ibraries are not a new idea. The Egyptians built an impressive one in Alexandria about 280 B.C. Two millennia later, libraries — especially the

large public and university libraries — perform a vital role in society and education. But defining the role of the library in this increasingly digital world

is not easy.

It is particularly not easy for the largest library in the world, the U.S. Library of Congress.

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The Computer Science and Telecommunications Board of the National Research Council has just published an in-depth review and set of recommendations for the Library of Congress. (The full report is on the Wcb at www.nap.edu/books/0309071445/html/). The report is no whitewash and is far from complacent. It paints a picture of considerable challenge for the library and, in extension, for dealing with keeping a historical record of the ephemeral Internet.

Historically, libraries have been collectors and catalogers of things — books, periodicals, maps and papers — but the equivalent of these things in today's world is increasingly digital. The Library of Congress does not have a good history of collecting digital things; for that matter, no one else does either.

With more than 100 million items in its collection, the Library of Congress does have a remarkable 200-year track record in collecting things in the physical world. This is helped in no small matter because the Library of Congress is where copies of works copyrighted in the U.S. go.

What should the approach in the digital arena be? As the report notes, no one institution, no matter how large, could possibly hope to collect even a majority of all digital content.

The report recommends the Library of Congress work in cooperation with other institutions, public and private, to figure out what to do. This is quite Internet-like in that the 'Net has to be managed in a cooperative way to work at all. Unfortunately for the Library of Congress, it works at the whim of Congress, and dealing with the digital world will require more funding and perhaps some legislation to clarify the Library's rights in the area of copyrighted digital materials. Thus, even if the Library of Congress knew the right thing to do, getting congressional attention is by no means a sure thing.

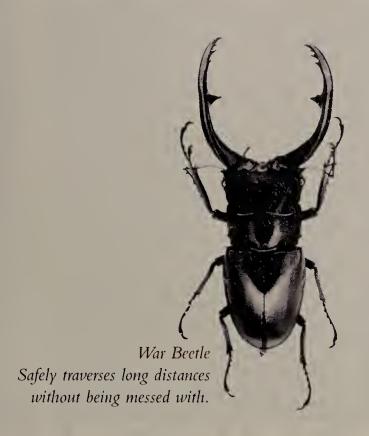
The report notes that the IT department of the Library of Congress is not as good as it might be and, like the rest of the world, it is having a hard time finding good technical staff. I guess stock options are out of the question.

The problems with the libraries dealing with digital materials may seem like an overly academic concern, but throughout history, libraries have served a vital role in the cducation of students and the development of laws, science and society. Failing to figure out how libraries can deal with the digital world would threaten our basic foundations.

Disclaimer: Harvard reworks its foundations every now and then, but I did not look at them for this column.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@sobco.com.





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AT FOUR-THIRTY ON A SUNDAY MORNING, A WEB SITE FRIES.

At eight-thirty a.m., people file into a conference room.

The IT director wants to know what happened.

The server vendor says it's an app problem.

The front-end vendor says it's the database.

The database vendor insists it's the servers.

All told, there are twelve different vendors. Twelve.

The IT director wants to know who's

responsible for making all this stuff work together.

After a long, ugly pause, the guy next to her whispers into her ear, "You are."

THAT'S WHEN IT HITS YOU. YOU ARE SO READY FOR



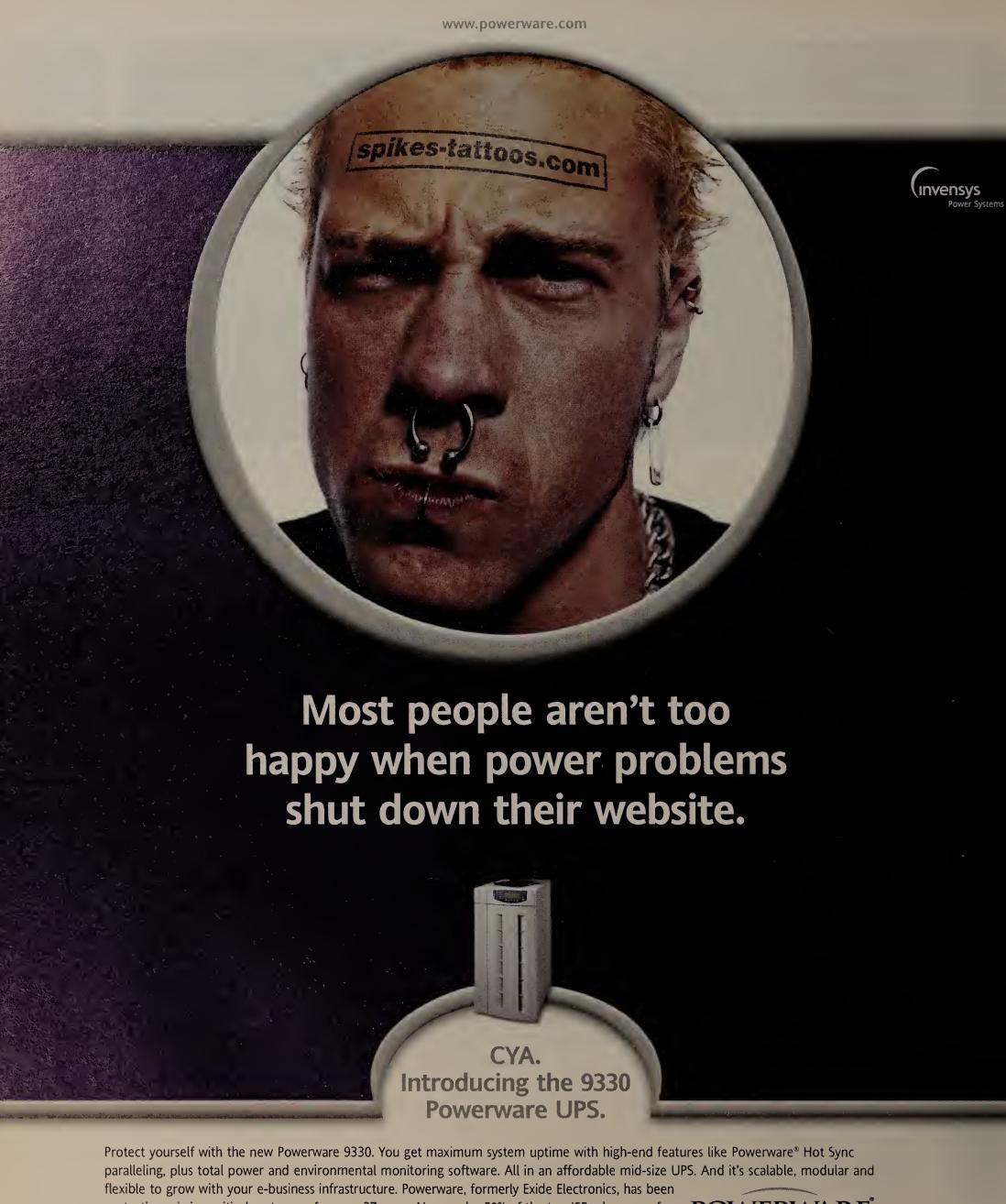


>>fact

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Technology

An Inside Look at the Technologies and Standards Shaping Your Network

Dr. Intranet



By Steve Blass

We have six
computers connected via Ethernet to share a
directory on the
server using Windows 98. We are

also running Sybergen's
Sygate to share an Internet
connection. We want a simple way to set up an intranet
to allow access to common
files, such as document
templates and invoices. I
heard we'd have to install a
Web server such as Apache
on the server to serve the
pages of the intranet. How do
the other computers access
the pages?

You have the TCP/IP network foundation in place to build an intranet. After installing a Web server (such as Apache or the Personal Web Server included with Windows 98) on a server with a static IP address, you'll be able to reach your new Web server by IP address inside your LAN.

To reach the Web server and its pages by hostname you'll need Domain Name System (DNS) for your local network, or you can place local host name entries in the c:\windows\lmhosts file on each of your computers.

With six computers, you may be well served by pointing each browser's home page to the Web server's IP address or by providing a master Imhosts file for your users to copy into place. Installing DNS is not difficult but will involve Sygate and client configuration changes.

Blass is a network architect with Sprint Enterprise Network Services in Houston. He can be reached at drintranet@paranet.com.

Megaco to bridge PSTN, IP networks

BY JAMES RAFFERTY

egaco/H.248 is an emerging standard that will enable voice, fax and multimedia calls to be switched between the public switched telephone network and emerging IP networks. Megaco stands for Media Gateway Control.

A joint activity of the International Telecommunication Union and the Internet Engineering Task Force (IETF), the Megaco framework could potentially enable service providers to offer a wide variety of converged telephone and data services.

Media gateways will be the junctions

packages. Packages are sets of commands, related events and statistics that can be added to a basic Megaco device.

A future Megaco-enabled phone network could support customer premises equipment in an enterprise. For example, consider a fax device that sits behind a PBX in a company. In this case, a call is placed by the fax device and routed to the local central office by the PBX. The central office then sends an SS7 message to a signaling gateway in order to get access to calling and called address information. This information is sent as a setup message by the signaling gateway back to the MGC. The MGC then identifies a second

configuration in real time as needed.

Suppose that a calling fax device issues a fax calling tone. Because it is possible that the receiving endpoint is not a fax device, it would not yet be safe to switch into a fax mode. To convey the tone information, the local MG issues a notify event, which tells the MGC about the fax tone detection. The MGC then issues a command to the remote MG requesting that it replay the fax tone.

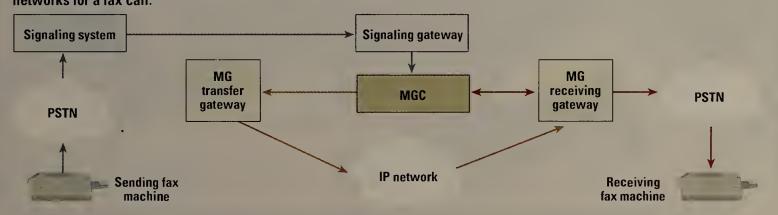
The MGC will monitor the fax negotiation tones sent between the local and remote MGs. Once the evidence is clear that the call is indeed a fax, the MGC can swiftly take action, place both media

HOW IT WORKS

Megaco/H.248

A media gateway controller (MGC) can identify different types of traffic. In this example, it provides the correct configuration needed to switch the traffic between public switched telephone networks (PSTN) and IP networks for a fax call:

- When a call is initiated, the signaling system (SS7 a protocol) passes the address information to the signaling gateway, which then transfers the traffic to an MGC.
- 2 The MGC connects the call over IP via the media gateways (MG).
- 3 If the transfer MG detects a fax tone, it sends a message to the MGC. The MGC then sends a command to the receiving MG instructing it to go into a fax mode. The receiving MG sends event notifications to the MGC, which provides confirmation.



that provide a path between switched and packet networks for such media as voice and fax. Media gateways can either reside at the very edges of the public network at the customer premises or in a central office. Media gateway controllers (MGC) will serve as the brains of the operation because they will control many media gateways.

Another component, a signaling gateway, will play an analogous role in capturing requests for address and enhanced service information by enabling retrieval via IP from existing Signaling System 7 (SS7)-enabled networks and their databases of subscriber-related information. In turn, the relevant address information is passed from a signaling gateway to an MGC.

Megaco implementations can also be enhanced using extension methods called

media gateway (MG), which can be used to provide an end-to-end connection via the long-distance service provider's IP network to the end destination.

At this point, the MGC is aware of both a local MG and a remote MG. When the media gateways are initially set up for communication, a voice encoding (vocoder) approach will typically be used. In our example, each media gateway is set up with two terminations, a switched termination on one side and a packetized IP termination on the other.

To provide the flexibility to check for calls other than voice, the MGC may set up the media gateways to do call discrimination. This enables an MGC to gather information needed to identify the media type for a call (voice, fax or data) and then modify the media gateway

gateways into fax-compatible modes, and a normal fax session can take place. The call discrimination package will then be deactivated and the fax session can proceed, delivering a document across the hybrid network. The Megaco call discrimination package is also sufficiently robust to enable detection of text telephone calls.

The emerging Megaco model and related standards will enable support of existing and new applications of phone service over hybrid phone networks that will contain a mix of switched, IP and ATM technology.

Rafferty is senior product manager for IP telephony at Brooktrout Technology. He can be reached at jraff@brooktrout.com.

Technology Update



Gearhead — inside the network machine. Mark Gibbs

LINKSYS FIREWALL/ROUTER HAS TEETH

ast week, *Network World* ran a review of five midrange firewall/router devices (www.nwfusion.com, DocFinder: 9426). The author,

David Strom, made a comment that Gearhead takes issue with: "Linksys . . . [makes] hubs that offer some minimal network protection for a few hundred

dollars. But if you want to be serious about keeping the bad guys away . . . you'll probably end up considering one of the more expensive units."





Now, Gearhead recently took a look at the LinkSys EtherFast Cable/DSL Router and begs to differ. In keeping the miscreants out, the LinkSys box does all you need until you need to get very serious and at half the price of the bottom end of the products covered in the review, it is a far better value.

As a side note, how many of you actually use the other features of the higherend firewalls such as logging, user authentication and content control? For example, do you review your logs regularly and have you ever actually used a log to troubleshoot? If you use those devices in a branch office or small officer/home office setup, we'd bet these features are used even less — if at all!

Anyway, the LinkSys EtherFast Cable/DSL Router provides router services as well as being an Ethernet switch with either one or four LAN ports depending on the model, a WAN port for cable modem or DSL and an uplink port. Built-in services include Network Address Translation (NAT), Dynamic Host Configuration Protocol (DHCP), IP filtering, port forwarding, static and dynamic routing.



1=awful, 10=insanely great

NAT is a core feature — this is a service that maps internal addresses to an external address thereby hiding your internal network architecture.

Setting up the LinkSys Router is easy. By default, the device is configured from a Web browser and monitors on the network address 192.168.1.1 (in case you're not aware, the address ranges 10.X.X.X, 172.16.X.X and 192.168.X.X are for private networks and aren't supposed to be forwarded by routers).

You'll have to reconfigure a PC so you can set up the LinkSys Router, and you need to tell the LinkSys Router what the ISP's assigned address is for your connection (assuming that your ISP doesn't use DHCP). You'll also need to define the LAN address range, whether to use DHCP and what address range it should use, as well as the maximum number of users to support (253 is the maximum).

You can enable "block WAN requests," which prevents your network from being pinged, set up for static or dynamic routing, enable port forwarding, block LAN users from accessing the Internet and block specific ports on Internet servers (for example, to block Napster traffic).

At less than \$200, the LinkSys EtherFast Cable/DSL Router is a winner. Ten gear teeth out of 10.

Route your comments to gb@ gibbs.com.

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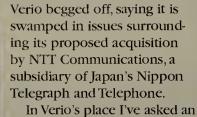
pinions_

Editorial

Web hosting panel set for upcoming ICE debate

f the five Web hosting companies I challenged to show up for a Sept. 13 debate at the Internet Commerce Expo in San Jose, all but one has taken up the gauntlet.

Exodus, WorldCom, Qwest and Intel are in.



800-pound gorilla to participate — AT&T — and it readily accepted. While that leaves us heavy on carrier-class providers, each has a different selling advantage, so it should make for an interesting debate.

Participating will be:

- William Yeack, executive vice president of professional services at Exodus.
- Mitch Ferro, director of hosting products for WorldCom's UUNET unit.
- Doug Stone, senior vice president of business development at Qwest.
- David Rowe, director of marketing with Intel's Online Service organization.
- Sandy Brown, hosting vice president of data and Internet services at AT&T.

I'm also happy to announce that Melanie Posey, IDC's hosting analyst, will be joining me onstage to help wring the truth out of these

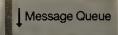
To refresh your memory about how these Network World Showdowns work, it goes something like this: Each panelist will get 2 minutes to spell out his basic position, then Posey and I will spend about 20 minutes questioning the group about differences among their services. The panelists will then have 25 minutes to question each other, and then we'll open it up for questions from the audience. The showdown will not be prerehearsed or staged; that's the beauty of the format. It makes for lively debate.

This is where you come in. Besides attending the event, you can help us keep the vendors honest by forwarding your questions.

For example, does size matter? Although Exodus is the big fish in the hosting sea, the company is tiny compared to the corporate giants now wading in. Will it make a difference?

Hopefully that will prime the pump and get you thinking of the issues you would like to see addressed. Drop me a line, and by all means beat a path to the Internet Commerce Expo in San Jose on Sept. 13.

> — John Dix Editor in chief jdix@nww.com



DEFENDING NORTEL

Your story on the status of Nortel's acquisition of Bay Networks (www.nwfusion.com, Doc-Finder: 9145), was relatively accurate from a marketing perspective, but omitted significant issues. The comparison of Nortel's IP strategy to Cisco's is inaccurate and misleading. While Cisco may have established a market-leading position with its WAN routing products, the architecture of the Layer 3 routing switches Cisco is shipping (as evidenced by the most recent Catalyst 6500) still relies on a Layer 2 chassis, supplemented with a lowperformance Layer 3 routing blade. This architecture is obsolete. In an objective evaluation of current vendors and available switching technology, Cisco should be exposed for the outdated and inferior products it is offering.

> Ed Henschel Hingham, Mass.

I found your story on Nortel's Bay buyout to be inaccurate and uninformed.

Nortel is much more than just routers and switches, it is a major player in some of the fastest and most important revolutionary technologies, including wireless, optical, IP telephony and e-business solutions. Obviously some areas have grown according to market share, but in these areas Nortel is providing solutions, not boxes. Routers, switches and PBXs are boxes — a means to an end. The end is the overall solution, and Nortel is the only vendor in the marketplace that can integrate these as a unified solution.

You need only look at Nortel's share price to realize how John Roth's visionary decisions have turned an old, bureaucratic giant into a slick, blue-chip, revolutionary company.

> Martin Satterthwaite Sydney, Australia

WITHOUT A TRACE

Regarding your story "Denial-of-service threat gets IETF's attention" (www.nwfusion.com, DocFinder: 9142):

If all ISPs required that end routers — routers con-

nected to a modem that links to Dynamic Host Configuration Protocol clients or networks carrying static IP addresses and not having any other connection to the Internet - reject packets carrying fake IP addresses, these problems would be largely solved.

> Dimitrios Souflis Senior software engineer Ovrimos S.A. Athens, Greece

Denial-of-service attacks are not started by hackers, but by script kiddies. A hacker is a technologysavvy person interested in finding out everything about his box. The majority of hackers know how to program in many languages, and they know these languages cold (unlike a normal programmer, who sometimes consults a reference manual). A script kiddie is somebody who uses other people's tools to wreak havoc.

A cracker is a person who breaks into systems. Crackers are more highly qualified than script kiddies and know how to program algorithms to crack codes. Crackers intend to do damage or gain access to specific parts of software or computer systems. Some of them, however, are contributors to security (remember LophtCrack?).

Please use the correct terms in future stories.

Bartek Kostrzewa Berchem, Luxembourg

SHOW THE RESULTS

Regarding the story on Widener University's switch from 3Com to Nortel Networks (www.nwfusion. com, DocFinder: 8845):

While I would have expected Nortel to compete favorably with Extreme Networks and the other vendors mentioned in the story, I was mildly surprised by the statement of Widener's Gary Habermann, who said Nortel "crushed" the competition. I would like to have access to Widener's actual test data. Working for a network company that resells most of the vendor equipment mentioned, I get to see the performance firsthand but had not seen Nortel's Passport 8600 in action.

Shawn Frost Kingsport, Tenn.

E-mail letters to jdix@nww.com or send them to John Dix, editor in chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification





User View . Chuck Yoke

CERTIFICATIONS DO NOT MAKE A NETWORK ENGINEER

here was a time when I could speak Spanish well. In order to get my bachelor's degree, I needed to fulfill a language requirement. So one summer I took an intensive Spanish course.

The teachers were native Spanish speakers, and the classes were conducted entirely in Spanish. By being immersed in Spanish four hours per day, five days a week, I quickly learned to speak the language — maybe not fluently, but well enough to understand and be understood by native Spanish speakers.

Then I got my degree, went to work and never spoke Spanish again. Put me in a Spanish-speaking country today, and I will be totally lost.

My experience with Spanish is analogous to what is happening to many people today who are seeking the quick route to gaining an industry certification. There are boot camps that advertise how you can become a Microsoft Certified Systems Engineer (MCSE) or Cisco Certified Network Associate (CCNA) in two weeks. Bookstores carry various books on how to cram for

the exams. The idea is to become certified as quickly as possible.

And why not? Surveys have shown that people who have an MCSE or a CCNA get more job offers and better salaries. But as I found with Spanish, the problem is if you don't use the knowledge, you lose it.

I have Certified Novell Engineer, Cisco Certified Design Associate and CCNA certifications. Yet I'm not a network engineer: I'm a manager. By attaining these certifications, I have gained the knowledge I need to understand the technical issues of networking and talk to my employees at a technical level. But I'm not a network engineer. If you see me in front of a terminal configuring a router, you'd better run for help.

If you see me studying a detailed network design, you'd better check my eyes because they are probably glazed over.

Cramming for a test or completing a two-week boot camp does not make a network engineer. What makes a network engineer is experience — experience that comes from late nights of staring at a terminal won-

dering why that new remote router doesn't respond to a ping. Experience that comes from having the manager, director and vice president of operations staring over your shoulder while you're trying to figure out why the network response time just bit the dust. Experience that comes from hopping on a plane at a moment's notice with a laptop, duffel bag and tool kit to bring up that new location.

I have nothing against industry certification. The knowledge that is gained from studying for any certification is valuable. But you can't stop with certification. Today, the MCSE or CCNA is equivalent to a bachelor's degree — it's an entry point into the technical arena, a way to quickly gain the basic knowledge and skills needed to do the job. But passing a test does not make a person an experienced engineer.

You have to take that basic knowledge, use it and keep it up to date.

Yoke is an IS manager in Denver. He can be reached at ckyoke@yaboo.com.

Security Check . Robert Gezelter

STOPPING SPOOFED PACKETS CAN CUT DOWN DDOS ATTACKS

ust we make major changes to the overall Internet structure to stop distributed denial-of-service (DDoS) attacks aimed at disrupting popular Web sites? Somewhat surprisingly, the answer is most likely no.

It has been reported that significant legal and technical hurdles prevent a quick, straightforward

and technical hurdles prevent a quick, straightforward solution to DDoS attacks. It is often suggested that the anonymity offered by the Internet must be eliminated to prevent future attacks.

Nothing could be further from the truth. While there are no perfect solutions, and indeed there are some costs, there is at least one straightforward technical approach that can reduce the hazards associated with these attacks at minimal cost.

Like a postcard, each message on the Internet, known as a packet, contains the addresses of both the sender and recipient. Reports of recent DDoS attacks indicate that the sender's address, referred to as the originator, or source, address, has often been forged — a process known as IP spoofing. Forging an originator address serves to confuse the trail leading back to the computer that sent the packets.

In the real world, we have already found solutions to deal with different types of fraud, including forgery, by requiring intermediaries to vouch for their principal's authenticity. Stockbrokers are subject to such rules when trading securities on behalf of clients. Brokers are required to make good on trades, even if the customer fails to deliver the funds or securities involved. This rule ensures an orderly market and acts as a discipline on member firms.

Similarly, airlines are required to check passengers' passports and other documentation before international flights. If a passenger's papers are not in order when the passenger arrives at his destination, he must be returned to the point of origin at the airline's

expense. It's not foolproof, such measures are reasonably effective.

Today's Internet structure can limit the use of forged originator addresses to confuse the trail and camouflage the systems being used to stage an attack. Requiring ISPs to check the origin addresses of packets entering their networks from customers is neither difficult nor unreasonable.

Accountability for Internet traffic doesn't require we make major technological or legal changes to our network infrastructure. It merely requires us to enforce some technological common sense.

The current Internet is composed of interconnections between ISPs. In concept, it is no different than the relationships

between stockbrokers in the financial market. Each ISP generally resells portions of its network to smaller providers, or directly to customer networks.

While all the levels may make this seem complicated, it is always true that a service provider, at any level in the structure, knows what addresses are assigned to its customers.

It's not unreasonable to require that each packet entering from a customer network have an originator address within that customer's network to be accepted for carriage by the provider.

Packets purporting to originate within Microsoft, for example, should not be arriving from the University of California at Santa Barbara. This restriction is not technically hard to implement.

Furthermore, there is no legitimate reason why



packets with incorrect originator addresses should ever exist on the Internet.

In my "Internet Security" contribution to *The Computer Security Handbook, 3rd Edition (1995)*, I wrote that originator spoofing was possible and likely to occur in the future. I also noted that such attacks could be prevented with ease. Sad to say, it would appear that many ISPs have not heeded this advice.

Stopping spoofed packets does not eliminate the potential for DDoS attacks, but it makes it much harder to covertly stage such an attack. It makes it easier and faster for law enforcement and service providers to track

and cut off the source of the attack.

Traceability and accountability are productive ways to deal with many hazards. If ISPs reject all packets with obviously fake originator addresses, the process of identifying the source of the attack is accelerated. The scale of the attacks would also be reduced.

Address validation restrictions don't affect the underlying degree of anonymity offered by the Internet, but they do provide a way to limit attacks and maintain an orderly network at minimal inconvenience for all parties.

Gezelter is a network security consultant and the Internet Security contributor to The Computer Security Handbook, 3rd Edition. He can be reached at gezelter@rlgsc.com.



gy with encryption to offer significant cost savings on WAN traffic.

BY TIM GREENE

Sure you want a VPN.

It can save you money. It can give you a better-meshed network. It can let more people share your enterprise resources securely. It can make you a bero.

VPNs have come a long way from where they started five years ago with simple secure connections across the Internet. Today, VPN encryption is virtually uncrackable. Encrypted tunnels can be integrated with firewalls. Authentication and key exchanges are standardized, and service providers are offering service-level guarantees over their own IP networks instead of the unpredictable Internet.

The time is ripe to take advantage of VPNs, but be ready to do your homework.

Define your terms

Make sure you know what you mean by a VPN. It's where you use an IP backbone — either the Internet or a network run by one service provider — to carry your WAN traffic. To protect your data, you establish secure, encrypted connections called tunnels across that network.

This is accomplished by adding a mix of VPN gear to your network: VPN clients for PCs, VPN firewalls, VPN routers, VPN gateways and VPN appliances that perform VPN functions separate from PCs.

Remote PCs can connect to corporate sites that are outfitted with a VPN server or gateway. Corporate sites can connect gateway-to-gateway over a VPN. With cooperation, VPNs can be extended to include business partners and customers.

A VPN doesn't have to do all of that to be worthwhile. Consider Travelways travel agency in Minneapolis. It cut its WAN costs

by 75% with a VPN that replaced four 56K bit/sec dedicated, digital data service lines. Those lines linked four Travelways offices with the Sabre travel network at a monthly cost of \$1,600.

A VPN, based on standard technology that comes with Microsoft's Windows NT Server and Windows 95 and 98 clients, lets Travelways connect the four offices via the Internet and share just one link to Sabre. Three of the dedicated links were retired, slashing the monthly bill to \$400.

That's about as simple as a VPN gets. Travelways is discovering more ways to save money through VPN technology, such as when the company owner heads to South Africa several months of the year. Now he can tap into the corporate network over the Internet via a local Internet access phone call rather than using international long-distance for direct dial.

More sophisticated networks require more sophisticated solutions. Healthcare provider Kaiser Permanente, for instance, plans a VPN that will have more than 20,000 users. It is preparing for a VPN trial that will include remote access for its employees, but it will also test whether business affiliates can tap select corporate resources securely over the VPN, replacing frame relay connections that cost more.

Frame relay is not only more expensive, it also requires more work to map static IP addresses from the business affiliates' networks to Kaiser's network, says Jim Best, Kaiser's network architect.

Build or buy?

There are layers of complexity to sort through, but first consider whether you want to piece together your own VPN or hire a service provider to do it for you.

If you have stringent security needs, you probably want to build your own VPN. That way you control what client software you use, what gateways you use, who gets what level of access to corporate resources and what authentication scheme you put in place (see story, page 58). Plus, building it yourself is a good way to educate yourself about the technology.

Interoperability still a problem

If anyone out there is going to connect to your VPN from a PC, they will need a client that is compatible with the gateway you are using.

All gateway vendors sell clients that work with their own gateways, and some defer to other vendors to supply these clients. Most notably, Information Resources Engineering's client, SoftPK, is used by many other vendors. (Cisco recently dropped SoftPK after buying VPN vendors Altiga and Compatible and is working on its own client.)

If a company wants to give access rights to users who work for a business partner, it would simplify matters if the partner's VPN clients worked with the host company's VPN gateway. Then the host would only have to grant access and privileges via the host gateways.

But although clients and gateways support IP Security (IPSec), the VPN standard, most do not interoperate with gear made by other vendors.

Users had hoped that Windows 2000 would solve this problem. Sporting a VPN client already, vendors could build interoperability between it and their gateways. Or companies that adopt Win 2000 Server could turn their servers into gateways. Win 2000 would be so available that the likelihood of finding a business partner using Win 2000 would be high.

But Win 2000 does not attempt to fully implement IPSec. For example, it uses Layer 2 Tunneling Protocol, which is different from tunneling used in fully IPSec-compliant gear.

The ubiquity of Windows is part of what made it attractive to Travelways, says Prashubh Batham, the Computer Pundits consultant who advised on that project. The travel agency used features that came with the Windows NT platform. If remote users want to connect to the corporate NT server via the VPN, they click an icon to get on the server.

NT VPNs are not considered as secure as some other VPN gear, but is useful for certain types of transactions.

Client distribution woes

Win 2000 VPN shortcomings also dash hopes that users would get around the burden of distributing VPN client software to thousands of PC users whose hardware is already in the field.

Win 2000 would solve the VPN client distribution problem for Kaiser Permanente, Best says. But Win

2000 is not deployed in its enterprise, and the company has a lot to learn about Internet remote access VPNs before Win 2000 might be useful, he says.

He places a high value on VPN clients already being installed on remote machines.

"Client distribution is one of the aspects of this technology approach that's worth avoiding," Best says.

Alternatives today include having IS staff install clients, distributing CDs and letting users do the installation (a potential help desk nightmare) or having them download the software from a Web site and installing it themselves.

Some vendors are working on easy-to-install clients that can also be managed from a central workstation, but these features vary from vendor to vendor, so check them out carefully.

PKI please

Setting up a VPN tunnel takes place in discrete steps, and at each step companies have choices about what technology to use.

First, one site or remote user has to connect with the network. That requires some form of verifying that the persons or devices connecting are who they say they are

This can be done with a user name and password that are checked against a Remote Authentication Dialin User Service database, as has been done traditionally with direct-dial remote access. This authentication can be enhanced with security tokens. If you have such security in place, it makes sense to buy a VPN that integrates with it so you don't duplicate efforts.

VPNs can employ public-key infrastructure (PKI) in which devices on the VPN swap encryption keys so they can send encrypted data back and forth. A certificate authority verifies users' keys and can issue and manage them for companies.

These certificate authorities can be set up by individual companies or a third party can run them. PKI is part of the IPSec standard, and while many vendors have adopted it, few have established interoperability with other vendors.

Two that have are RSA Security, makers of Keon PKI software, and Baltimore Technologies, makers of UniCERT PKI software. They say they have tested their products and are fully interoperable. UniCERT and Keon issue and manage digital certificates within a PKI and authenticates

Best says he is exploring the possibility of using PKI to

authenticate users and distribute and manage encryption keys. Meanwhile, he will continue to use hardware security authentication tokens already used for direct-dial remote access. They take time to distribute and replace when they are lost, stolen or damaged, Best says, and he would like to drop that burden.

Remote security needs attention

Everyone has heard of DSL, and now they want it.

It's cheap and fast and if an enterprise user becomes a telecommuter, they want DSL, not some pokey 56K bit/sec modem. If that telecommuter is hooked in to a VPN, that always-on DSL connection becomes a security risk that has to be dealt with (see story, page 62).

That means a firewall to keep intruders out of that remote PC and out of corporate resources. But personal firewalls are not cheap if you're outfitting thousands of users.

That has some users checking out VPN appliances such as those made by SonicWall or NetScreen.

Those boxes cost approximately \$500 and include a firewall, encryption hardware and VPN software. These are inexpensive, but require VPN servers made by the same vendors at central sites.

Through a spinoff called SofaWare, VPN vendor Check Point Software is looking into VPN firewall software that DSL and cable modem vendors could install on their gear to secure broadband connections. But at the moment, it is an issue users will have to struggle with, says Dave Kosiur, an analyst with The Burton Group, a consultancy in Midvale, Utah.

Retail chain Lamps Plus in Chattsworth, Calif., solved that problem by hiring a service provider, Zyan, to install the DSL. Lamps Plus runs its VPN over Zyan's network, avoiding the Internet and its security threats.

That also saves Louis Astorga, director of PC support for Lamps Plus, from dealing with three different local phone companies for DSL service. "We just gave Zyan the locations and they took it from there," Astorga says.

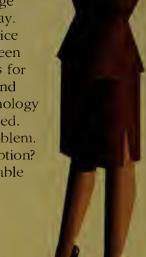
Forge ahead

The bottom line is VPNs aren't perfect, but they can be useful. Remember, all

VPNs are not created equal, so tailor yours to the needs of your end users with the knowledge that maybe your VPN won't give you everything you

thing you want, at least not right away.

Forge ahead anyway. Vendors and service providers have been working on VPNs for five years now, and parts of the technology are well established. Firewalls? No problem. Triple-DES encryption? All set. Interoperable IPSec tunneling? Hmmm. Maybe someday.





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VPN service providers

There are plenty of options if you want to outsource your VPN.

BY TIM GREENE

ometimes it just doesn't pay to keep control of everything, and that includes VPNs.

Sure, it would be nice to buy a bunch of dumb connections to a public IP network and attach your own VPN gear to those pipes, but you might not have the time or the money or the expertise in-house.

Hiring a service provider lifts the burden of dedicating staff time and expense to setting up the VPN. You still decide what provider to use, but a good chunk of the work becomes someone else's problem.

At the same time, using a service provider limits your options. It means the service provider puts in the gear it wants and will likely offer a set of cookie-cutter configurations that may not exactly meet your requirements.

These services vary widely. For instance, AT&T has a dial-up VPN service that lets you pick what tunneling protocol you want to use: Point-to-Point Tunneling Protocol, Layer 2. Tunneling Protocol (L2TP) or IP Security (IPSec). You can pick 56-bit or 128-bit encryption.

You can also use digital certificates to authenticate users and have AT&T manage them. Customers also have a choice between Nortel- and Linux-based customer-site equipment.

UUNET offers Total Access edition of its UUsecure VPN service that includes managed dedicated and dial-up access and manages connections with business partners. The service is rolling out now in the U.S. and will be extended to Europe and Asia by year-end.

Similarly, Genuity (formerly GTE Internetworking) offers Internet dial-up and dedicated access to its VPN service, and also supports digital certificates. Genuity is one of the few VPN service

providers to
offer a service-level
agreement (SLA) on how
many packets are lost on its network: customers receive a credit when there is a

International service provider Infonet offers just a site-to-site VPN service that includes managing Cisco routers at each customer site and calls for traffic to stay on Infonet's network and off the public Internet

Sprint can arrange for users of other service providers' VPN services to link securely into its VPN customers' VPNs, essentially enabling extranet VPNs. Sprint lets customers buy or rent customer equipment.

In short, there are plenty of options.

1% or greater loss rate.

A service might be the best way to establish a VPN with business partners.

Mutual mistrust could be solved by putting the network in the hands of a third party. Service

provider
Aventail focuses on such
extranets.

Beware that service providers face the same problems deploying VPNs that companies do, says Jeff Wilson, an analyst with Infonetics Research in San Jose. Service providers have more resources than a company, but they also have thousands of users, so they can run into resource problems and need to enlist help.

For example, UUNET runs its own VPN service, but resells the services of SmartPipes to customers if they want the service managed.

Give yourself plenty of lead time and seek references from other customers before signing a contract.

SLAs depend on how much of the network the service provider owns. No one can guarantee the performance of the Internet. You should be able to get SLAs for network availability and latency, but that latency will likely be for a certain portion of the network. It might be from edge-to-edge of the provider's network, excluding access links from customer sites. Make sure you know

which parts are included.

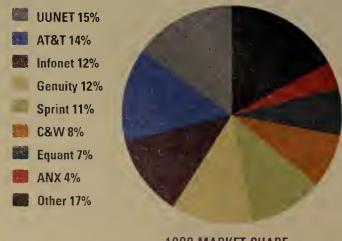
There are compromises between buying and building. If you lack resources to deploy your own VPN, but want to retain control of it, high-end, value-added resellers such as GNP, Atrion and Inovatia can build it and turn it over to you.

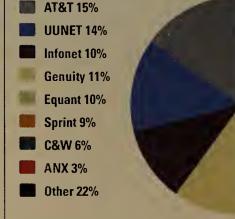
OpenReach lets customers download software from the Internet to turn idle PCs into VPN servers and can have your VPN up and running the same day.



VPN service provider market share

Many of the top vendors are ISPs that offer customer premises equipment-based services, such as UUNET (MCI Worldcom) and Genuity. Global carriers such as Equant and Infonet that offer frame relay-based services, among other types, have also captured leading market share.



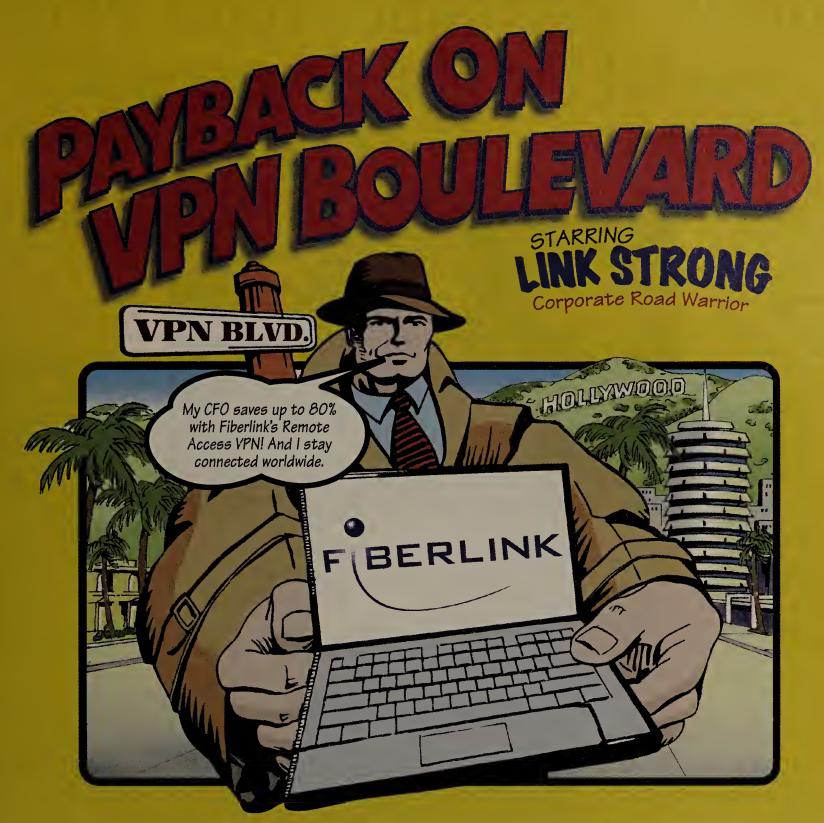




2000 MARKET SHARE

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Trimble Navigation finds VPNs useful for remote access

BY TIM GREENE

tanley Ching and Paul Forbes are peeling an onion, but it doesn't make them cry. Far from it. It makes them practically giddy with glee.

Their task will save the company they work for, Trimble Navigation in Sunnyvale, Calif., lots of money and improve corporate communication.

The two IS professionals have found that setting up a VPN is like peeling layers off an onion, never knowing what problems will be revealed next nor how many layers remain.

They're not complaining, though, because they already stand to cut their network costs, and they are still in the trial phase of their rollout.

Consider that just one of the company's engineers runs up an ISDN long-distance bill ranging up to \$5,000 per month to dial in from home in Tucson, Ariz., to Trimble's corporate network. Those costs could be cut to a flat \$300 per month Internet access fee for a 700K bit/sec DSL line if the company switches to a remote access VPN.

Setting up such a VPN calls for redundant Cisco VPN gateways for \$30,000 but the investment is well worth it, says Forbes, Trimble's network engineer. "If we get rid of [the engineer's ISDN bill] for 10 months, we just paid for the VPN boxes. That's very compelling," he says.

Similarly, the company stands to cut the cost of linking its New Zealand office to headquarters from at least \$8,000 per month to less than \$4,000 by switching from frame relay to a site-to-site Internet VPN link supported by a 512K bit/sec wireless access link.

Spurred by such dramatic potential cost savings, Trimble embarked on its VPN project last December. First it identified three sets of WAN users: the roaming sales force, telecommuters and Trimble sites. The first two groups dialed in to an 800 number using analog modems or ISDN. They number about 500 scattered around the world.

Of the company's more than 40 offices, 15 were connected to Sunny-vale headquarters via frame relay, including sites in 10 other countries.

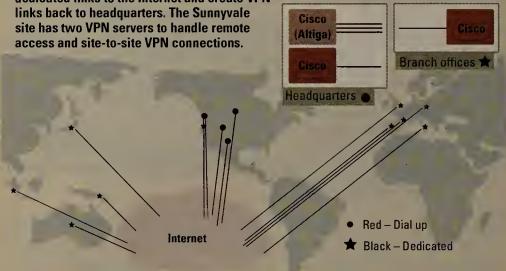
Roaming users became the first target because of the \$75,000 per month 800-number bills they run up, says Ching, Trimble's IS manager for network infrastructure. If those users instead made a free local call to an ISP, they could use VPN technology to turn the Internet into a secure, long-haul connection back to headquarters, which is connected to the 'Net by two bonded T-1 lines.

Using gear Ching and Forbes bought from Altiga (now part of Cisco), they quickly set up a remote access trial among 30 mobile users. The VPN client



Trimble Navigation's worldwide network

Telecommuters and mobile users link to the Internet via a local ISP and set up a VPN link with the Sunnyvale, Calif., headquarters. Remote branch offices have dedicated links to the Internet and create VPN links back to headquarters. The Sunnyvale



software was installed by IS staff, then users installed it off CDs. Now they download it from a secure Web site.

The self-installation is so easy, virtually all users have done it without help, Forbes says.

Trimble has signed an agreement with Ipass, an international consortium of ISPs that lets users make local calls in 150 countries to connect with the Internet. About 150 Trimble salespeople are now using the dial-up VPN.

Trimble planned to use the same Altiga VPN boxes to link corporate sites, but discovered the task was more complicated than it originally thought and more complex than the Altiga gear was designed to handle.

"The box has support for [Open Shortest Path First and routing information protocol], but it is not per se a router," Forbes says. Also, the Altiga gear would have required a firewall, dynamic host control protocol support and a serial connection as add-ons. A Cisco router with VPN features could

do that in one package.

Cisco routers could also head off potential problems when Trimble tries to load balance between dual Internet links into important sites. Trimble

wants to route based on policies such as latency and packet loss for real-time applications, such as sales order entry.

"The Altiga boxes were never, ever meant to do that order of traffic shaping," Forbes says.

Forbes' and Ching's knowledge of VPNs wasn't sophisticated enough at the time they made the purchase to recognize that.

Trimble has decided to go with Cisco's recommendation for site-to-site connections: VPNs based on Cisco 7100, 2600 and 1700 series routers, encryption processors and the VPN features of Cisco IOS software. That requires upgrading the Cisco routers at each site, but that was planned within 18 months anyway.

"If we chose to steer away from that, we'd find ourselves more and more outside what Cisco is developing. And even though they'd support [Altiga site-to-site], Cisco technicians are not going to have very much experience with it. We looked at [Cisco IOS site-to-site] from a functionality and a support perspective and said, 'You know what? We better go that way," Forbes says.

The final user group, telecommuters, remains a challenge. Many of them will be connected to the Internet VPN via always-on broadband links provided by DSL or cable modem, making these sites vulnerable to attacks over the Internet. That means Trimble needs inexpensive firewalls that can also support the VPN and be managed and monitored easily for mass deployment.

Cisco's lowest price answer was a PIX firewall that costs about \$2,000 — too much for most sites, Forbes says. So the company is looking to Red Creek to make its Personal Ravlin II combination firewall-VPN boxes interoperate with the Cisco gateways.

Forbes says he expects the Red Creek gear to suffice for a trial rollout later this year, but to fully deploy to teleworkers he needs Cisco to step up. "We need more elegant, more scalable solutions," he says.

Meanwhile, Trimble has lined up DSL service provider DSL Networks to provision DSL lines as well as offer service quality guarantees for traffic crossing DSL Networks' private backbone. That way teleworkers get guaranteed quality of service by staying off the public Internet. Trimble gets a 99.75% network-availability guarantee.

Finishing its VPN deployment requires patience as Trimble waits for Windows 2000 clients to fully implement IPSec and interoperate with Cisco VPN gear. If Windows 2000 becomes the standard Trimble desktop, there will be no extra VPN client software to deploy. The company is also waiting for tools to change policies and update client software.

"The fact that the vendors have gotten to the point that they have is admirable. There's a lot of functionality packed within VPNs, and they're doing a pretty good job of moving on it. We realize these are deeper layers of the onion," Forbes says.

Stranded by traditional delivery systems?



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VPN vulnerability

Personal firewalls for remote users are recommended to protect the network from hack attacks.

BY SHARON GAUDIN f you're extending a VPN to your remote workers, you need to keep in mind that those direct and sometimes always-on

links into your corporate network are a prime target for

The explosion of the number of telecommuters means they're tapping into corporate budgets, strategic plans and engineering projects from PCs that are outside the firewall, constituting the weak link in your security defense system.

While this ever-expanding army of telecommuters may be doubling their work efficiency and slicing their drive time, they also may be opening thousands of opportunities for hackers, competitors and thieves to easily slip right into the heart of the company network.

"By and large, telecommuting security is not taken as seriously as it ought to be," says Ken VanWyk, corporate vice president and chief technology officer of Para-Protect, a security consulting and service firm in Alexandria, Va.

"It creates a major backdoor that most companies are not aware of. I'm not saying the sky is falling, but you seriously need to pay attention to these things," he says.

VanWyk and other security experts say most companies feel safe hiding behind a network firewall. Employees may be dialing into the system, but that firewall will keep any unwanted, prying eyes out.

Other network administrators still think they're safe if they wall their network with a firewall and give employees a VPN so they can safely dial in through an encrypted tunnel.

Wrong again.

"If I compromise your home computer, I can follow you right into the network," says Tim Belcher, chief technology officer of RipTech, a security consulting and service provider also in Alexandria. "Working from home is

great, but from a secunty standpoint, it's a significant threat because

most security software that companies are employing doesn't protect the home computer.... All someone has to do is hack into a home computer and follow them through an authorized connection." Security experts and industry analysts agree that corporate firewalls help keep intruders at bay and VPNs safely encase information as it flows between the main office and the home office.

The trouble lies in the ability of an intruder to ride through that tunnel piggybacking on

"The encrypted tunnel is safe. That link is fine," says Sammy Migues, chief scientist at Infrastructure Defense in Alexandria. "That doesn't mean [the home] computer itself is safe. It has a lot of vulnerabilities.... Once I get onto that home computer, it's almost a certainty that I could execute their VPN client software remotely. If you have to type a password, I could remotely log your key strokes or view your screen and then I would see everything you're seeing."

To get in to your home computer, hackers need to probe IP addresses. Analysts warn that the hacker's job gets easier if the home user has a constant live connection, such as a DSL line, which often has a static IP address. A dial-up connection generally has a different IP address with each connection and while that can also be hacked into, it's certainly more difficult.

The solution to the problem of vulnerable home PCs is to install a personal firewall on the home computer which will help keep intruders out of that desktop, as well as out of the corporate network.

"Statistics show that IP addresses used by dial-up services get scanned [by potential hackers] basically every day," Migues says. "If you got a DSL connection [midweek], I'd bet that you'd be scanned two or three times by the end of the weekend."

As the number of telecommuters continues to increase at Econometrics, a marketing data warehouse in Chicago, securing those off-site links will be a top priority, according to Brian McGuire, chief technology officer.

"I guess there's been a little part of me saying that nobody was listening in, but that's not good

since it appears that there probably is [someone listening],' McGuire says. "We know the problem is coming. We know we're going to have to tighten up our security."

There are ways to shore up your remote workers so their connections into the network are a business advantage and not a security threat. Here are some tips from security experts:

- All remote users should be mandated to use a VPN.
- All remote users should have a personal firewall. It will not only protect the computer from invasion but also will tell you how many times the connection is being probed.
- All remote users should have intrusion detection systems to provide an additional layer of information on break-in attempts.
- The company's IT team should set up the home system instead of letting the user buy something, expense it and set it up themselves. That will give ·you the chance to take care of vulnerabilities and harden up the system.
- Make sure that remote users are installing patches and software upgrades as frequently as users in the main office.
- Computer policies in effect in the office also should hold the same for telecommuters and travelers. If company computers aren't to be used for personal use in the office, the home user shouldn't be surfing the 'Net or letting kids play games on the company system.
- Monitor what software is being installed on the remote system and restrict it to business use only.
- The IT team needs to check these systems with the same due diligence it does systems in the office, even if it means doing periodic visits.
- The traveling worker needs to have sensitive files encrypted.
 - Install access control programs that will ask for a password and then alert an administrator via modem if that password is being put in incorrectly.
 - Traveling workers should be reminded not to leave computers in hotel rooms or cars.

Don't let a system with a VPN into the company network out of your sight.

 Traveling workers also should have multiple layers of security, such as screen locks and bootup passwords.

 When choosing a DSL provider, look for one that offers security capabilities.



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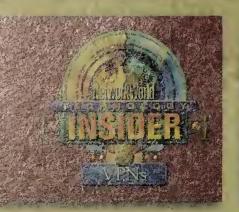


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Opinions

Should you build your own VPN or outsource?

Control, scalability, security and cost are key factors in the build-or-buy decision.

BY DAVE ZWICKER

here are many strategies for building an enterprise-class VPN. All share one fundamental goal: to extend corporate network connectivity while providing a level of manageability, scalability and simplicity that equals or exceeds that of the existing private network infrastructure.

Some companies choose to realize this goal by outsourcing their VPNs from a service provider; others do it themselves. A look at the pros and cons of each approach shows that building a VPN in-house yields significant advantages over outsourcing.

The biggest advantage of building your own VPN is control, particularly over



security. An in-house VPN lets you maintain control over all security credentials, systems and practices used to access your network; establish end-to-end security across multiple ISP domains; and integrate and leverage existing in-house security technologies, such as public-key infrastructure.

Unlike an outsourced VPN, an in-house VPN lets your firm keep its ISP-independence. This is an advantage because it lets you match Internet costs, coverage and connection speeds with the needs of your users. You can also change ISPs without impacting day-to-day VPN operation.

Another benefit is you can ensure you're getting the best-in-class technology that meets your specific needs, rather than a generic offering from an ISP.

Finally, building an in-house VPN lets you minimize operating expenses. You save the premium charged for outsourced managed services and can integrate your existing remote access and site-to-site networks to achieve the most costeffective blend of services.

Now let's look at the usual arguments for outsourcing a VPN. The first is it is the "only" option for companies that don't have the in-house staff to manage and support a VPN. Several years ago this was the case, but today all but the smallest companies can rely on increasingly sophisticated in-house VPN solutions that automate the support function with fault detection, automatic link recovery, error reporting and centralized management controls, reducing the need for additional staffing.

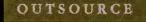
Another argument for outsourcing is that it simplifies deployment.

This may be true, but it also lessens your degree of control over the corporate network. The larger the network, the more dependent you are on your outsourcer.

The argument that outsourcing eliminates the risk of technology obsolescence is true, but it doesn't necessarily mean that you save money. You end up paying an ongoing premium in the form of expensive service charges.

For small companies whose IT staff size and skill level cannot support a VPN, outsourcing may be the best choice. For all other firms the answer is clear. Do it yourself.

Zwicker is vice president of marketing for Indus River Networks, a VPN vendor in Acton, Mass. He can be reached at dzwicker@indusriver.com



BY MARK FISHER

ometimes it's faster and easier to buy it than to build it from scratch. The benefits of a VPN — which lets companies create secure, businesscritical communication channels with their remote offices, business partners and customers — are readily apparent. Deciding whether to build your own VPN or outsource is often a laborious process resulting in the inevitable tug of war between cost and staffing constraints. However, you need only look at your escalating network administration costs to see that outsourcing is the best solution.

According to a recent TeleChoice study of VPN users, the most common trend

in the market is a move from in-house VPNs to outsourced ones. In addition to management challenges, IT managers cited scalability as a key factor for outsourcing.

The TeleChoice report noted that companies using a managed VPN service could support more than 2,300 users, whereas in-house VPNs could on average support only 150 users. As the number of users increases, the demand for IT resources to monitor, manage and provide 24-7 help desk support also expands exponentially. So at the end of the day, the IT manager has to decide where to allocate precious staffing resources. In this environment, the outsourced VPN becomes an attractive option.



In addition to scalability, redundancy, reliability and manageability, a VPN must incorporate security and performance. Unfortunately, these characteristics don't always work synergistically. For example, the level of security encryption deployed can often degrade the VPN's overall performance. In addition to providing design expertise to address these problems, a VPN service provider frees users from obsolete technology and the hassle of physically upgrading a VPN every time a branch office or group of remote workers needs to be added to the network.

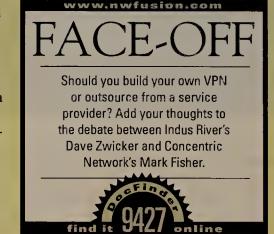
One important development that has overcome many objections to VPN outsourcing is the improvements in service-level agreements (SLA) and quality-of-service (QoS) guarantees. A VPN provider should offer SLAs that cover network avail-

ability, packet latency and packet loss, and track these metrics proactively and automatically credit customers' accounts if these SLAs are not met. QoS measurements are critical to understanding usage patterns and helping to ensure the customer has enough resources to accommodate future growth.

It's been said that outsourcing equates to higher cost, for VPNs this isn't necessarily the case. According to the TeleChoice study, total recurring costs for outsourcing to a managed VPN service provider were \$8,310 per month, compared with \$14,690 per month for a homegrown solution.

In the end, whether you buy or build a VPN should be determined by the core competency of your IT staff.

Fisher is senior vice president of marketing for Concentric Network, a VPN service provider in San Jose. He can be reached at mfisher@concentric.com.





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Strategies

Fostering a technology esprit de corps CHART YOUR FI

One IT pro gives tips on how to make sure dot-coms and other businesses understand the technology they're building on.

BY BETH SCHULTZ

executives who dream of hitting it big in the dot-com world better be as smooth talking as they are technically astute.

Nothing but the sharpest conversational skills and great leadership qualities will serve them in dealing with their colleagues and customers. That's because dot-commers tend to be a tad overzealous, including in the way they pitch a company's technical capabilities.

Dot-com CEOs and other company ambassadors have the tendency to turn the company's grandest visions into concrete offerings with only the slightest prodding of prospective customers. Left with the follow-up, IT folks have the unsavory task of keeping clients hooked on the company while gently squeezing the hot air out of sales pitches.

IT executive Sharon Ballgae knows the routine all too well.

"I called myself the 'reality check,'" Ballgae says, referring to the deal-closing role she played while vice president of IS at Point.com, an online retailer of wireless phones, service plans and accessories in Bothell, Wash. "I'd have to go in and say, 'I'm glad you're excited about the company. We have a lot of things that we'll be able to deliver to you, and here's the timeframe, here's the cost."

Overselling is certainly not novel to the dot-com arena. But perhaps for the first time, IT executives are feeling its ramifications full-force. That's because so much of a dot-com sales pitch centers on technology: "Sure, we can personalize your page views." "You want to link into our order-processing system? No problem."

Ballgae, who also advises small technology firms, shares her secrets for getting business managers and technologists working from the same playbook.

First, "a key representative from the technology department has got to help build realistic, achievable goals for the company," she says.

Too often, she says, start-ups are driven by CEOs who are wonderful visionaries but who have no operational experience. What happens is corporate objectives are built around the visionary's plans. "That'd be OK, except the visionary usually doesn't understand just what it's going to take to get there," Ballgae says.

Second, the IT leader has to ground everyone else with an understanding of the technology the company will rely on to deliver products and provide customer service. Here's where those well-honed conversational skills will really help out. You don't want to squelch enthusiasm about the firm's possibilities, but you do need to temper it so others don't promise features and functions that even the hardest working IT team with an unlimited budget couldn't deliver.

When Ballgae joined Point.
com two years ago, she insisted on weekly meetings between senior executives and IT project teams. A start-up environment can be chaotic, and scheduling regular discussions about the status of product development and other corporate initiatives is imperative. In her case, Ballgae says,

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"I needed those living outside of technology to understand how they played into the matrix."

The big problem for her was that business owners weren't articulating what their systems needed to do. That left the IT development teams with the responsibility for deciding features and functions. That's clearly backwards, but typical of the way a start-up operates, Ballgae says.

"With start-ups, you usually either have a strong technology side or a strong sales and marketing side. It's rare to have those [two groups] communicating with and fostering each other," Ballgae says.

Point.com addressed the problem by having Ballgae take on a broader strategic and operational role. Late last year, she vacated the IT vice presidency and became executive vice president. IT remained under her purview, and operational functions such as editorial and human resources became her bailiwick, too. That meant Ballgae was able to institute processes throughout the firm that she'd found working efficiently for her IT team.

Of course, not all IT managers would want to make such a career move. However, if you're in the position to mandate increased operational responsibility and feel you've got the right skills, go for it, Ballgae says. Techies with strong management, operational and leadership skills are in great demand.

Ballgae, for one, has taken her combination of technology and leadership skills on the road. This month, she joined

start-up Retrieval Dynamics, a wireless application service provider in Sarasota, Fla., as chief technology officer. She expects the challenges at this new company will be similar to those she experienced at Point.com.

"I know I'll need to foster an esprit de corps around the technology," she says. ✓

Sharon Ballgae's biggest challenge at a start-up was communicating what technology could bring to the company.

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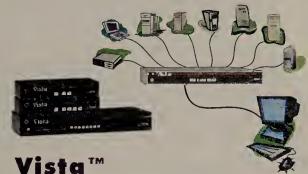
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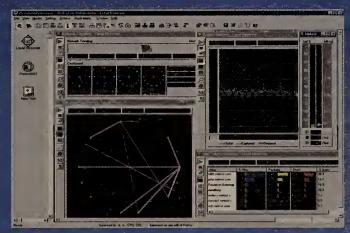
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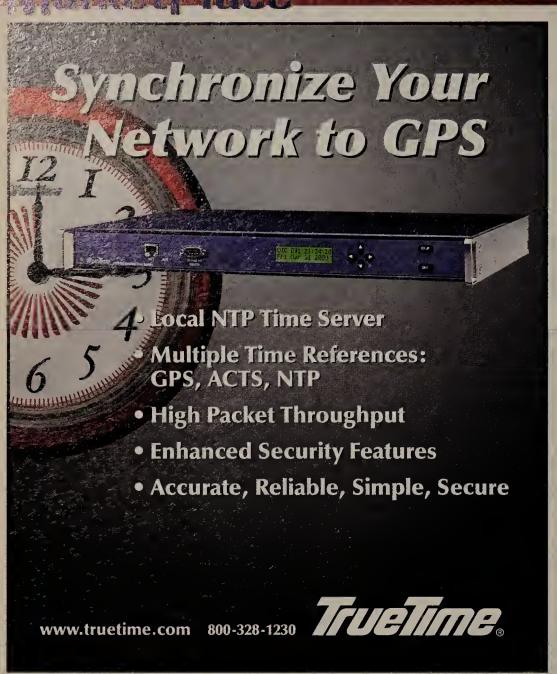
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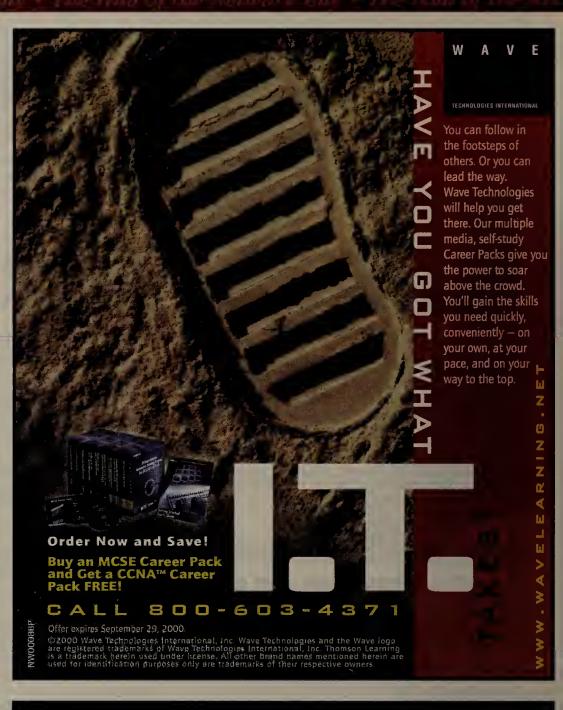


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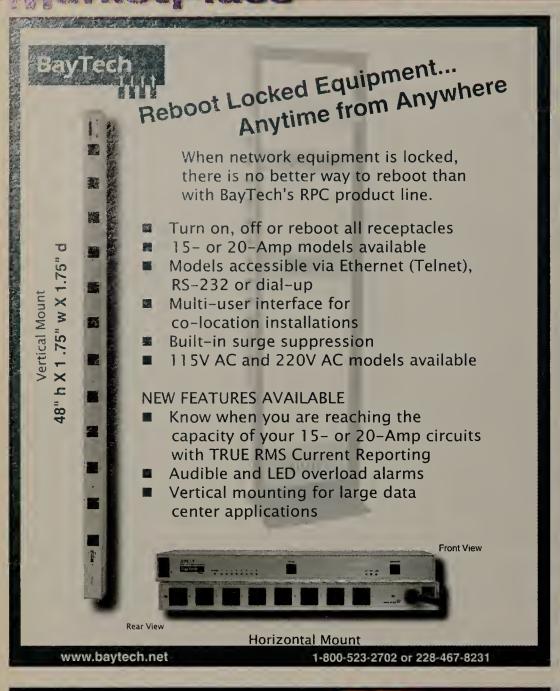
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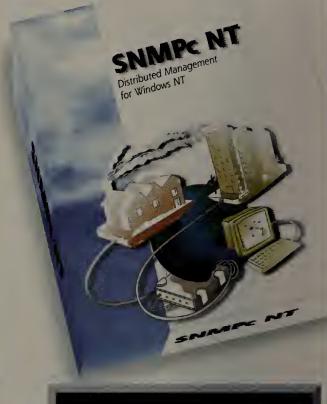
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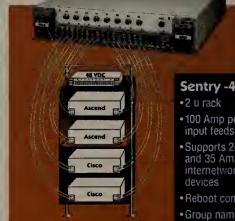
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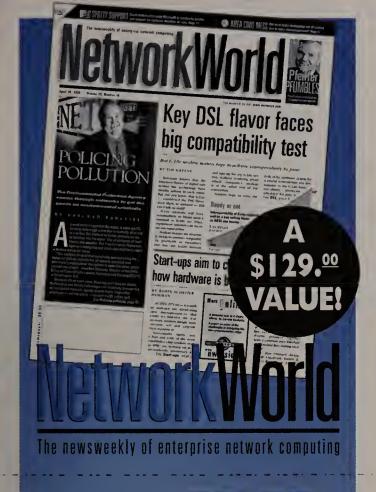
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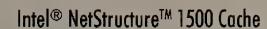
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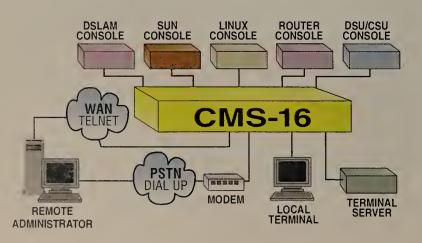
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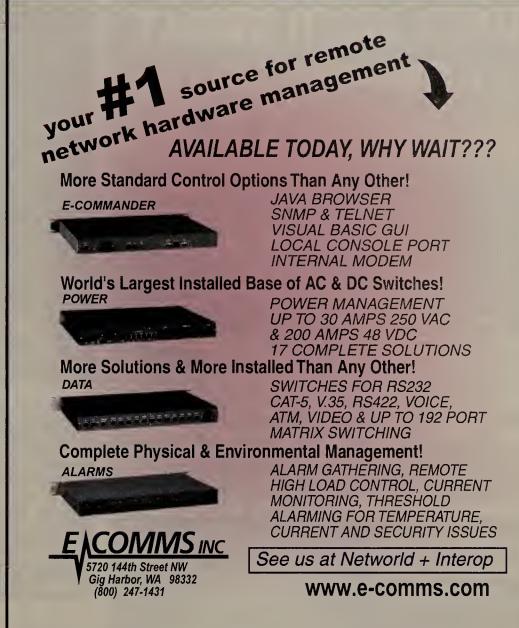
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CONTRACT: CMM-1317

OPENING/DUE DATE: September 20, 2000

TITLE: Consultant to provide an E-Procurement solution

SYNOPSIS/DESCRIPTION: Contractor to provide an E-Procurement solution that enables the transition of the Procurement systems at the New York Metropolitan Transportation Authority (MTA) and each of its affiliated agencies into a largely paperless process utilizing the Internet The solution will initially address a core module for small purchases with the capability of expansion to include additional modules that perform a wide range of procurement functions A Pre-Proposal Conference will be held on, Monday, August 28, 2000 at 1:00 PM at 2

Broadway, New York, NY 10004, 20th Floor, Training Room. Please RSVP to Hosie Fason, Procurement Manager, at (718) 694-4115 to confirm your attendance. For additional information on this procurement, visit our website at http://www.mta.nyc.ny.us/nyct/procure.



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consultant (Web Systems Anarst) Job location: Herndon, VA Duties: Analyze, design, develop & architect product based system solutions & graphical use interfaces for e-commerce appli cations; Work with clients to ar extranet & electronic commerce web sites; Analyze the business process & customize e-commerce web site features in ac-cordance with client require-ments; Perform stated duties using Visual Basic, ASP, COM, using Visual Basic, ASP, COM, IIS, JavaScript, InterDev and SOL Server on Windows 95/NT and UNIX platforms. Requires M.S. or foreign equiv. in Eng. Comp. Sci. or a closely related field. Academic coursework must include classes in JavaScript and InterDev. Send resume to Teri Allen, march-FIRST, Inc., Suite 3500, Chicago, IL. 60606.

enior Venfication Engineer: Design and develop models that represent the high-level funcionality of the hardware design for networking and telecommu-nications products. Develop test nighest level of confidence in the products before going into manufacturing. Perform simulation: and identify and isolate prob-lems. Requires: M.S. in E.E. or related Engineering field. Knowl edge of data communications ogic design, and HW/SW co verification tools in a UNIX envi onment. Knowledge of hard ware modeling in C and Verilog. 40 hrs/wk (9 to 5); \$70,000/yr. Send two resumes/responses to Case No. 20001490, Labor Ex change Office, 19 Staniford Street, 1st Floor, Boston, MA

Software Engineers: Analyze, dsgn & dvlp s/ware systms using SQL, PL SQL, Oracle. Masters in Eng, Comp Applies + 1 ye exp. Send resumes to HR, First Rehabilitation Life Insurance Company of America, 600 Northern Blvd, Great Neck, NY 11021-5202.

Software Engineer (Business Appln.): Design, dev. & imple ment software for Business Application in accordance with ient's specifications. Modify and/or enhance sys. capabilities develop client-specific database systems for current & projected needs. Analyze & manage clien pased environments by using PeopleSoft 7.0, HRMS Financial modules, SOR 8 Oracle. Duties also include enhancements, system adjust ments, fine tuning, coding changes & upgrades for bus software applns. MBA with minor in Comp. Science/Information Technology. Sal. \$70K/yr + Med. Benefit. Send 2 resumes to: President, Solution Specialists, nc., 400 9th Street, Suite A Conway, PA 15027.

Info Technology Manager ea by rechnology Investment Co in Piscataway, NJ. Must have Masters in Info Systms Mgmt & 1 yr exp performing mgmt tasks for enterprisewide info engagements. Respond to: HR Dept, Lotus Pacific, Inc., 200 Centennial Ave, Ste 201, Piscataway, NJ 08854.

System Consultant wanted by software consulting firm in Maitland, Florida. Responsible for systems analysis, design, coding, testing and maintenance of information systems for business applications like finance, accounting, banking, payroll, HR. Work directly with the company's clients on their business automation paeds company's clients on their business automation needs, perform business process re-engineering and suggest appropriate IT solutions. Required Computer Skills: C/C++, Unix, Oracle, MS Windows/NT, DOS Sybase Foxoro Foxbase DOS, Sybase, Foxpro, Foxbase COBOL. Educational Qualifica-COBOL. Educational Qualification: Must have a four year rollege degree with one year IT (information teamology) experience OR 3 years college degree plus 2 years IT experience. Respond to: HR Dept., Universal System Technologies, 1061 Maitland Center Commons, Ste # 202, Maitland, FL 32751.

Principal Programmer Analyst: and support client/server appli cations in the Open Systems environment including GUI and database maintenance of custom systems. Analyze and de business processes through data modeling and enduser involved prototyping. Requires B.S. or equivalent in Computer Science. Knowledge of Unix shell scripting, UNIX systems administration, AS/400 Server architecture, and Active X. Knowledge of Progress GUI development, database design and administration, 40 hrs/wk (9 to 5) \$74,000/yr. Send two resumes/responses to Case No 20001617, Labor Exchange Of fice, 19 Staniford Street, 1st Floor, Boston, MA 02114.

Vice President, Finance. Direct cial activities of the company plan & develop overall financia strategies to increase capital; manage, plan, & secure financ-ing through private placements of debt & equity. Develop & maintain business relationship with banks & external clients supervise financial analysts responsible for preparation of complex computer based financial models to ensure accuracy Develop business plans, Musministration/equivalent & 3+ yrs. of work exp. working in executive capacity (finance) in the information technology industry. Send resume with transcripts of educational credentials to educational credentials Compudyne Wynfosystems Ltd., 1822 Spring Garden Street, Philadelphia, PA 19130-3917

SOFTWARE ENGINEER: Analyzing the database require ments and designing the data base using Oracle and Sybase Writing stored procedures and database triggers. Knowledge of creating GUI using Visual Café and Visual Basic. Developing applications using Java, EJB JSP, Servlets and PERL. The job duties are to write code, com plete programming and perform testing, debugging of applications and implementing. Also to update specifications review documentation, interface with the users, define system requirements and necessary modifications. Requires Masters in Computer with no experience re quired. 40 hours per week at \$ 72,000 per year. Please send resume to Case # 20002108, PO Box # 8968, Boston, MA 02114.

Applications Engineer wanted by PDM Software Sales & Support Co in Beverly, MA. Must have BS in Comp Sci. Respond to: HR Dept, SmarTeam Inc., 900 Cummings Center, Ste

307T, Beverly, MA 01915.

Senior ASIC Development Engi-neer-Duties will include support-ing the front-end and back-end development of ASIC design for current and future company development of ASIC design for current and future company products as well as designing and implementing certain portions of company technologies. Will develop and stay current on technical skills and product knowledge as well as generating and maintaining appropriate engineering documentation. Will provide timely reports and feedback to company management and verify portions of company technologies including IP forwarding. Duties performed using Verilog and IP/ATM protocols. Requirements include a Master's degree in Electrical Engineering or Computer Engineering and three years of experience in the job offered or related field of ASIC design. Applicants must have unrestricted authorization to work in the United States. Salary \$90,000-110,000/year. 40 hours/wk. Respond with two copies of resume to Case #20001921, Labor Exchange Office, 19 Staniford St., 1st Fl., Boston, MA 02114.

Chief Computer Programmer Openings): Plan, schedule, analyze, design and develop Client/Server applications, using object-oriented techniques and Power Builder 5.0; prepare on-line and batch programs; create and maintain triggers and Store Procedures; prepare custom scripts using Transact SQL for Sybase RDBMS; write documentation to describe applications development, logic, coding and corrections. Req.: 3 yrs college edu or foreign equiv. edu. in Computer Science or related discipline plus 4 years in job offered or 4 years in related occupation as a Systems Analyst, Programmer, Consultant, or any suitable combina tion of education, training and/or work experience. Hrs: 8a-5p, M-F. Send resume to Von Lee, Wellington Leisure Products, Inc., 1140 Monticello Road, Box 224, Madison, GA 30650. Refer ence No. CV001.

the leading information service and solution provider, currently has challenging career opportunities for Software Engineers in our Rockville, MD office. Software Engineer - Design and code complex computer systems for high volume transaction processing & revenue manage-ment applications using C language & VMS operating sys-tem. BS in Comp Sci or related discipline w/3 years exp re-quired. Software Engineer Level II - Design & code complex computer systems for high volume transaction processing & revenue management applications using C language, VMS operating systems & Rdb database or Forte. MS in Comp. Sci. or related discipline + 2 yrs exp or BS in CS or related w/5 yrs progressive exp required. Salary \$65-75K. Please fax resume to (201) 836-4466 or email: erin k mcwilliams@lmco.com An Equal Opportunity Employer.

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SOFTWARE ENGINEER: Design, Develop, Database Admin istration, in client/server archi tecture using Oracle database, Oracle Software development tools like Developer 2000 and Software developing languages like C in Unix and Windows Operating environment. The job duties are Design, Develop, Database Administration, Monitor database activities, Tune the database, Write Backup and Recovery procedures, Install and Upgrade the database, Test and Implement Oracle database and Software. Requires Masters in Computer with no experience required. 40 hours per week at \$ 75,000 per year. Please send resume to Case # 20001053, PO Box # 8968, Boston, MA 02114

Senior Analysts, Programming, Duluth, GA. Develop, modify, and implement complex information systems. Code and implement efficient advanced architecture components that conform to company's architectural standards. Provide technical consulting regarding architectural principles and development techniques. Instruct and direct other Architecture personnel. Provide training for less experienced developers. Translate developer requirements and recommend architecturally sound solutions. Conduct independent research and resolve technical problems. Prepare detailed specifications for writing programs. Prepare estimates for new projects, enhancements and naintenance. Use UNIX, Oracle, Visual C++, Visual Basic SOL and SOL Server. Req.: B.S. CS or related field and working knowledge, through academic coursework or experience, of UNIX, Oracle 7 Visual C++,. Visual Basic, SQL, and all phases of applications systems analysis and programming. In lieu of bachelor's degree will accept equivalent progressive work experience. DOE, Jennifer Falk Federated Systems Group, 5985 State Bridge Road, Duluth, GA 30097 Please reference CW2.

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Please mail or fax resume to: Ms. Ashley Kiersten, Recruit-ment Manager, Decision Architects, 2 Canal Park, Cambridge, MA 02141. Fax: (617) 761-3677 Email: Hire_Me@decisionarc.com

Visit: www.decisionarc.com

Decision Architects, a Monito Group Company, is an equal opportunity employer

BOSE Corporation, an innovatronics and acoustics, has an im mediate need to fill a range of SAP, EDI, and Sales Systems Support positions in the Boston area. The following positions all require a Bachelor's degree (or equivalent) in Computer Science, MIS, Business Administration, or similarly relevant field and 2-6 years relevant experience to include the requirements described below.

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Please mail or fax your resume to: Mr. Donald Baptiste, (IMSP), Bose Corporation, Dept. 5-D-1, The Mountain, Framingham,

MA 01701. Fax: (508) 766-7499. Email: don_baptiste@bose.com. Visit: www.bose.com.

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Consultant - Responsible for a broad range of Business Solutions Group (SAP/R3) consulting activities working with current and prospective clients. Duties include: participation in client and internal presentation to gather requirement specifications and information about problem areas and/or inefficient business processes; analyze information to develop business plans; contribute to engagement workplan and execution, and define solutions to client business needs; identify issues and problems and suggest SAP/R3 and other software solutions to improve productivity and cleaner business processes. Requirements include a Bachelor's degree or equivalent in Engineering, Computer Science, or related field and one year of experience in the job offered related field of business applications consulting. Experience must include participation in an SAP/R3 project. Applicants must have unrestricted authorization to work in the United States. Salary \$87,000/year. 40 hours/wk. Respond with two copies of resume to Case # 19992137, Labor Exchange Office, 19 Staniford St., 1st floor, Boston, MA 02114

SENIOR SOFTWARE DEVELOPER to provide on-site consultancy to analyze and develop software systems solutions to business problems in major JD Edwards Enterprise Resources Planning (ERP) financial and distribution modules; create architectural design for database conversion; write database mapping and conversion programs from legacy systems to JD Edwards ERP systems; create custom programs and business functions with source code C/C++, JDE OneWorld programming tools and API with Event Rules, NER and Visual Basic; write database SOI code in Oracle and MS SQL Server; provide technical support for functional end users and trouble shoot JDE operation systems develop system design including functional specification, design specfication and production of deliverables, Require: M.S. in Computer Science/Business Administration/Engineering and two years experience in the job offered or as Application Developer. 40% travel to customer sites required within the United States. Salary: \$70,000 per year, 8 am to 5 pm, M-F. Apply with resume to: President, Business Oriented Software Solutions, Inc., 3040 Holcomb Bridge Road, Suite D-2, Norcross GA 30071.

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PROGRAMMER ANALYST

with 2 years of industry experience to design and develop software applications. Excellent communications and a Bachelor's degree required.

Fax resume to: Tina (781)932-0895 or email: tina.betti@talentpoint.com

Programmer Analyst, Bedford, MA: Perform database design using Visual Basic, SQL Server Internet Exiplorer-RDS, Java & Visual Foxpro. Provide technical support. Reqd. 2 yrs. exp in job offered or 2 yrs exp. in any computer related profession. 40 hrs/wk., 9a-6p. \$55,000/Yr. Applicants should submit two (2) copies of resume in response to case #20001848, Labor Exchange Office, 19 Staniford St. 1st Fl. Boston, MA 02114.

Programmer Analyst. \$63K/yr. 8a-5p. 40 hrs/wk. Analysis, dsgn, dvlpmt & prgmg using C, C++, Visual C++, VB, Visual Java++ Sybase, UNIX and WinNT. Bach or equiv in Comp Sci, Electronics or related field of Engg. 1 yr exp in job offd. Job loc: Duluth, GA. Send resume w/r# Softs018 to: Softscape America, Inc., 3308 Peachtree Indus Blvd, #120, Duluth, GA 30096

Software Engineers wanted by Info Technology Firm in Tenafly, NJ. Must have Bach in Comp Sci, Math or Engg & 1 yr exp troubleshooting h/ware & s/ware problems. Respond to: Systems & Programming International, Inc., PO Box 398, Tenafly, NJ 07670.

Software Developers: Define system scope & requirements Design & develop Internet & client/server based applications in light of future directions in hardware & software growth using object oriented tech, Visual Interdev, ASP, RDBMS, SQL Server, Oracle, Crystal Reports, Reg: MS in comp. sci. IT, or tech field. \$50K & up. Resumes to: S. Mahendrakar, Software Services & Resources Inc, 7024 Santafe Pkwy., Atlanta, GQ 30350

Sr. Programmer Analyst wanted by Securities Trading Co in Jersey City, NJ. Must have MS in Computer Science or directly related field. Respond to: HR Dept, Knight Trading Group, 525 Washington Blvd, Jersey City, NJ 07310.

Software Developers (2) wanted by Virginia based Co involved in computer consulting/technical staffing for job locs in Washington D.C. and McLean, VA. Must have Mast. in Comp Sci, Math, Eng or related field & 3 yrs exp. or Bach. in same fields & 5 yrs exp. Respond HR Dept, Butler Technology Solutions, 7900 Westpark Dr, McLean, VA 22102 or e-mail resume to aoconnor@butler.com

Sr. Programmer Analyst: Analyze, design, develop & implement s/w applns. by applying prg. techniques in C++, Java & Oracle on UNIX & Win. environment. Perform OOA/D using UML and Design Patterns. Create project specifications, models, diags & docs for coding & testing, M.S. in Comp. Sc/Eng. or B.S. in Comp Sc./Eng. with 5 yrs of progressive exp. Sal \$70K+ & Med. Ben. Send 2 resumes to: President, Solution Specialists, Inc., 400 9th Street, Suite A, Conway, PA 15027.

Lead System Quality Engineer wanted by web-based opinion survey software developer in South Plainfield, NJ. Must have Masters in Comp Sci, Info Systems, Systems Engg & 3 yrs s/ware exp. Respond to: Qtopics Inc., 4081G Hadley Rd, South Plainfield, NJ 07080.

Developers. Atlanta based openings for SAP consultants (R/3), COBOL developers & software developers for distributed client server systems (Oracle, VB, SQL Server). Assignments in Atlanta & throughout U.S. BS comp sci, engg or related field. From \$60K. Resumes to: V Ganupuru, Instcomp, Inc., 4501 Circle 75 Pkwy, Ste C3140 Atlanta, GA 30339

Systems Analyst wanted by Co mfa household products in North Brunswick, NJ, Must have MS in Comp Applics, Comp Sci or closely related major to perform system design functions, produce systems specifications & documentation utilizing Oracle applications, ProC & SQL tools. Respond to: HR Dept, USA Detergents Inc., 1735 Jersey Avenue, North Brunswick, NJ

Full time Senior Project Engineer to design and create GUI (Graphic User Interface) with Visual C++/MFC (Microsoft Foundation Classes)/Object-Oriented C++ programming in Windows NT. Must have a Master's Degree in Computer Science, or related field. Educational or work background must have included object oriented programming and Visual C++ 5.0/MFC. Salary: \$59,775/yr. Send resume to: Electronic Tele-Communications, Inc., 3605 Clearview Place, Atlanta, GA 30340, Attn: Elaine McTyre.

Database Analyst wanted by Securities Trading Co in Jersey City, NJ. Must have BS in Finance or Computer Science & 2 yrs s/ware related exp. Respond to: HR Dept, Knight Trading Group, 525 Washington Blvd, Jersey City, NJ 07310.

Sr. Systems Analyst wanted by Internet Service Solutions Co in New York, NY. Must have Bach in Comp Sci, Engg or Math & 1 yr exp evaluating, dvlpg, maintain ing, installing & implmtg looal & wide area network operating systems using C++ on UNIX & Windows based systms. Respond to: HR Dept, Perform.com, 675 3rd Ave, 27th FI, New York, NY 10017

Consultant, Business Solutions wanted by North Carolina based Software Development Firm for job loc in Palm Harbor, FL. Must have BS or equiv in Comp Sci, Comp Engg or MIS & 3 yrs consulting exp. Respond to: HR Dept, Michelle Lioy, IFS Industrial & Financial Systems, Inc., 2801 Slater Rd, Ste 100, Morrisville, NC 27560.

Several positions available, including, ASIC Design Engineers, Sr. Software Engineers and Jr. BIOS Engineers in a variety of locations. Requirements and salary vary per position. Send resume to: Nanda Chheda, American Megatrends, Inc., 6145F Northbelt Parkway, Norcross, Georgia 30071

Visionsoft, Inc., a NH IT Co., is looking to fill the following positions at their work sites Software Engineers: Exp in the following skill sets are preferred: SQL, PL/SQL, Oracle Developer 2000, Lotus Notes, Corba, Java, Masters in Eng. Comp. Sci, w/1 yr exp. (or) Bach w/5 yrs exp/dsgn & dvlp, various s/ware applies using similar skill

Send resumes to HR Dept. 131 D. W. Highway, #662, Nashua, NH 03060

Systems Administrators needed for NJ IT Co to maintain & setup various Enterprise level servers running Solaris OS, setup data ctr & perform maintenance duties. Apply to R. Gorga, Bluestone Consulting, 1000 Briggs Rd, Mt. Laurel, NJ 08054.

Computer Security Coordinator wanted by Real Estate Mortgage Company. Must have a BS in CIS & 2 yrs exp preferred. Contact: Manhattan Mortgage Co, Inc., 555 Madison Ave, 14th FI, New York, NY 10022.

Programmer Analyst wanted by Computer Software Co in Port Washington, NY. Must have Masters in Engg. Respond to: HR Dept, Sandata, Inc., 26 Harbor Park Dr, Port Washington, NY 11050.

Senior Software Quality Assurance Engineers wanted by S/ware Quality Assurance Testing Co. in NY, NY. Resp: Dvlp & Direct systms testing projects & associated documentation. Proficient in C, VB, Java Script, exp writing manual & automated test scripts & test plans. Respond to: HR Dept, TesCom USA Software Systems Testing Inc., 11 Penn Plaza, 5th Fl, NY, NY 10001.

Network Systems Engineer wanted by Computer Consulting Firm in New York, NY. Must have Masters in Mgmt, Info Systms or Comp Sci & 3 yrs comp exp. Respond to: JN, Box 4241, GCS, NY, NY 10163.

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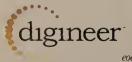
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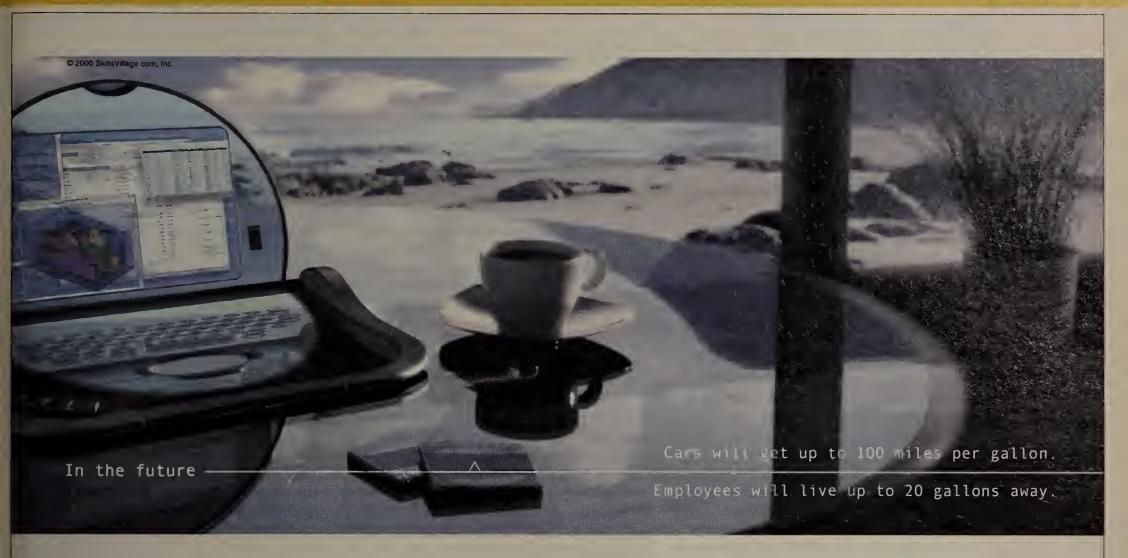
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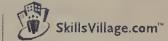
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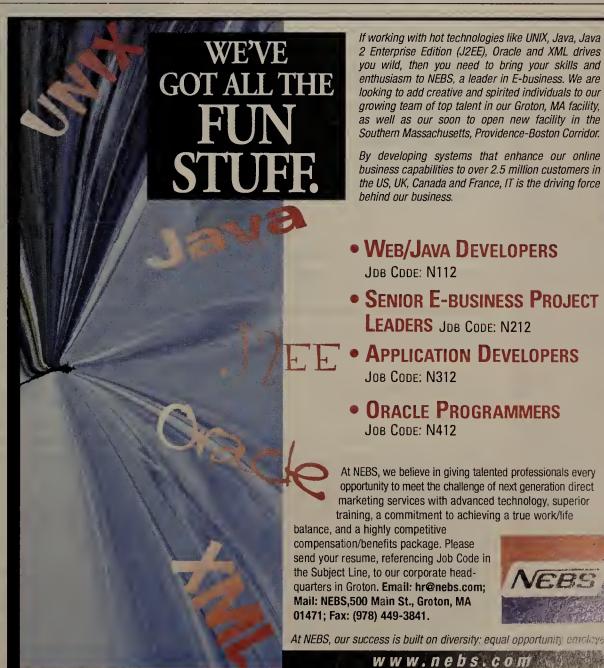
Director of Information Technology City of Oakland, California (Salary range: \$116,512 -- \$143,043)

As a member of the City's management team, the new Director will have the opportunity to move Oakland forward with technological advances that will establish it as the model for the future of technology in the public sector. Serving as the primary advisor, he/she will guide the City's leaders towards a pioneering level of efficiency and overall performance in entrepreneurial applications. The Director of Information Technology oversees an annual budget of \$6.5 million and 80 full-time employees. The Office of Information Technology (OIT) is responsible for telecommunications services, business applications, Internet presence and the technical infrastructure that supports these services.

Requirements for the position include a bachelor's degree from an accredited college or university in computer science, information systems management, business management, telecommunications, electrical engineering or related field. Possession of a master's degree is highly desirable. The successful candidate will have five years of progressively responsible management/supervisory experience in the field within the private or public sector. Qualified individuals should submit a statement of interest, current salary and resume No Later Than September 20, 2000. to:

Ms. Teri Black or Mr. Jerry Oldani THE OLDANI GROUP 188-106th Avenue NE, Suite 420 Bellevue, Washington 98004 Phone: 425.451.3938/Fax: 425.453.6786 E-mall: searches@theoldanigroup.com http://www.theoldanigroup.com





The language of business may be English, Japanese, German, Spanish, Chinese or French, but the language of the web is Java. As traditional corporations and entirely new e-conomy businesses turn to the Internet as the basis of exchanging money and materials, Java has gained prominence as the hottest of the hot skills in a flaming market for talented people.

Amazon.com Seattle, WA

Jova skills are fueling many projects of Amozon.com, from software used to manage the business to enobling Amazon.com's newest offering, buy/sell exchanges. "We are using software to do things that have never been done before," exploins Al Vermeulen, director of platform services. "Almost as exciting os the projects is the speed of which we run – we spend just a few months on every project because we have to get it up and working."

Vermeulen is looking for people with language and design skills. "Most important, we are looking for people who continuously learn and who have the obility to deliver," he soys. "We need that passion for getting something done that accomplishes o business gool."

The business views its one limiting factor as its obility to build software quickly. "That means people," says Vermeulen. "We empower developers with tools, and they have to take off.

"We believe the pace and the absolute technology edge of whot we ore doing are key to attracting people," adds Vermeulen. "We also know the biggest reoson people stoy here is because of the people who are here. Throughout Amazon.com, you hove the opportunity to work with smart people. We are building on ownership culture, based on owning stock, but also on acting and feeling like on owner. The compony isn't a third person, it's us."

Vermeulen admits there's another reoson he joined Amozon.com. "We are part of history in what we are doing here," he says. "Amazon.com has driven what e-commerce is becoming. In 10 years, we'll be able to look back, ask ourselves how did we do that, and then know that we were port of creating something entirely new."

CoolSavings.com Chicago, IL

CoolSavings has a simple business model – bring together consumers interested in soving with odvertisers who offer discounts. The odvertisers poy to participate on CoolSavings.com with torgeted sovings offers to CoolSovings' more than 8.7 million members.

"Keeping up with growth hos been one of our biggest challenges," says Joe Henson, monoger of development. "It's a good problem to have – sifting through new opportunities and nailing down those that have the best opportunity ond determining what is required to make them hoppen."

The result is a softwore-intense business that needs senior developers, database administrators, web developers and back-end scripting. "We use Java to handle some of our business logic, and we primarily use active server pages," explains Henson. "We need people who show their communication skills, can work with the end-users and develop relationships that transform fuzzy logic into actual requirements."

CoolSavings plans to add 50 percent growth to the IT organization this year. New employees begin as members of a swat team. "You'll handle everything from bug fixes to new features that need to go up quickly. You'll develop, maintain and support the site to gain learning about it. There's just no other

Christopher Landry, recruiter for Deloitte Touche.
"We need people who are proficient in these base skills and who can be trained in other technologies that we deliver to our clients, such as Ironworks, SalesLogix and SpoceWorks."

Deloitte Touche works primarily with companies in manufacturing, distribution, public sector, not-for-profit, real estate, financial services and high tech. "Typically you would be working on e-business strategy and development engagements, as well as e-business package implementations," Landry explains. The firm also works with clients to integrate legacy systems with new e-commerce systems, as well as personalization of systems, customer relationship monagement and EAI applications.



way to learn," says Henson. "Then you get to pick what you want to work on – short or long-term projects, the swat team or back-end. You can specialize or move from area to area.

"We're a standard dot-com – the work is fost-poced ond challenging," soys Henson. "We adapt new technologies readily. Most of oll, we have fun. We want people to be able to look forward to coming to work."

Deloitte Touche Chicago, IL

As e-business shifts into o core position for the Deloitte Touche firm, Java and Javo Script capobilities are critical. "The basis for a majority of the e-commerce ond e-business development projects we ore working with and will be working with are based on Java and JavaScript technologies," says

Landry looks on resumes for a long list of technologies in application development, database development and infrastructure and design. "We look for longuoges such os Visual Basic, Java, C++ and active server pages," Landry says. "In addition to NT and UNIX, we also look for experience with infrastructure systems ronging from Domino to Cisco to Bay Networks." The firm partners with several system providers, including Siebel, SalesLogix, JD Edwards and Lawson.

"There are several very good reasons to join Deloitte Touche," Landry says. "Our solution practice is growing of 30 to 40 percent annually. Our target market, mid-market growth companies, will afford you the best opportunity to grow quickly and work with cutting-edge technologies. And Deloitte Touche is continually listed in Fortune Magazine's professional services sector of '100 Best Places to Work for in America.'"

Digineer, Inc. Mason, OH

More than half the software developed by Digineer, Inc. is a direct link to patients receiving healthcare. "We are focused on clinical applications and the care side of the operation," explains Jeff Amfahr, vice president/chief technology officer for Digineer.

The company, located just north of Cincinnati, recently completed a fully integrated, online system to run the GI clinic at Mayo Clinic in Rochester, MN. "The clinic sees several hundred patients every day, and the medical histories and images are now available online and as needed instead of by physically retrieving a medical file," explains Amfahr. The majority of projects developed by Digineer depend on Java and Java Beans.

"These are white canvas systems," adds Amfahr.
"Right now we are developing a diabetes
management system. The projects involve software,
but also complex medical issues. The systems have
to be perfect." Amfahr seeks people who have led
projects or parts of projects, who have worked in
teams on development, and who have experience
documenting their work.

"We keep people at Digineer because we do custom development," he says. "There's some new project all the time, not just upgrades. Plus, it's emotionally satisfying. What we do helps people and that's nice to know."

iXL, Inc.San Francisco, CA

iXL is in the business of e-transformation. "We help companies move from where they are today – whether they are bricks and mortar or a brand new startup – into the new economy," explains Steve Gee, vice president of technology for iXL. "While most people think of the new economy as Internet-driven, we think of companies transforming the way they do business by building world-class sites through the fusion of strategy, back-end technology, creative design and marketing."

iXL works with a variety of clients, including Virgin Atlantic, Delta Air Lines, General Electric and several startup dot-coms. iXL did the HTML design and graphic loyout through back-end technology integration for Delto Air Lines' web site. Virgin Atlantic called upon the company to develop its entire Internet capability, including online ticket bookings and communicating with frequent flyers.

"We need people with one to three years Javo experience, although we do hire some recent college graduates with computer science or engineering degrees," soys Gee.

"iXL places a strong emphasis on other competencies – whether you can work on a team for instance. It also helps to have experience with the entire development life cycle so you can appreciate the need to define business requirements, architecture, design, coding and coding standards, reusable components and quality assurance."

At iXL's San Francisco location, turnover of personnel is low for this industry, with no voluntary losses in the past four months. "There are a lot of secrets to keeping talented people," says Gee. "For example, we know that the nature of being an engineer is that you want to keep on learning. Therefore, we leverage our industry-leading technology alliance partner program, allowing you deeper access to the best technologies. We have development labs where you can get on, play with and build many of the new and emerging technologies."

iXL also offers a 4X4 Engineering Fellowship. "This leverages the variety of our projects and the type of company we are," explains Gee. "You get the opportunity to work in four different industries, using four different technologies during your first two years. It's ideal for those who want and need diversity. Afterward, some will choose to specialize and immerse deeply into a technology or industry, while others will want to continue to learn new technologies and industries. Here you have the freedom, encouragement and support to go beyond your perceived limits. We want you to be the best engineer you can possibly be."

Synapta Palo Alto, CA

Bringing dot-coms to life is Synapta's bread and butter. Since 1994, the company has played a critical role in building the technology behind some of the Internet's most successful startups, including DoDots, zipRealty.com and HomeGain.

"Typically, we're approached by one or two individuals armed with an idea," explains Tiffaney Dickey, Synapta's manager of human resources. "Seed-stage entrepreneurs turn to Synapta to develop the core technology that brings Internet startups to life. Synapta stands out because you don't need millions to start working with us. But, you do need a viable business model and a capable management team," she cautions. Engagements of Synapta usually ronge from \$150,000 to \$300,000.

"zipRealty.com is o prime exomple of o successful Synopto startup," Dickey states. "The online realty service came to Synapta with a rock-solid business proposition and seed stage funding. zipRealty.com oimed to launch a site that would ollow people to buy and sell homes on the Web. We worked

closely with their internal technology team to design and implement the company's winning technology solution in only eight weeks – which led to the first home sale over the Web just six weeks after the launch," says Dickey. "When zipRealty.com was ready to develop their own solution, Synapta helped transition them effectively."

Synapta helps startup clients by providing them with technology strategy, application development and site management services. "Synapta focuses on building the technological foundation for the company, allowing the founders time to find clients, build partnerships, and search for funding," says Dickey. "In addition to building and implementing a proven technology strategy for its seed-stage clients, which helps reduce the risks associated with creating e-businesses, Synapta also serves as a core member of its client's technology team when presenting to potential investors. By doing so, Synpata helps its roster of startups secure the funding necessary to get to market rapidly."

Dickey says Synapta is looking for people to be creative members of teams using advanced technologies such as EJB and Java. "Typically, we hire one out of every five candidates. We spend a lot of time getting to know the people applying to work here because it's important that there's not only a technical fit, but also that this will be a place they will enjoy and stay. Synapta needs employees who thrive in a fast-paced environment, who have stellar Internet software skills, especially senior Java developers and people who have designed eyecatching Web sites – the look and feel as well as the infrastructure."

Project management is also very important, Dickey adds, because "what takes us six to eight weeks may take six months at a more traditional company. At Synapta, our engineers have an opportunity to immerse themselves in new technology projects every six to eight weeks, keeping them stimulated and engaged."

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Red Hat,

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ages, and better features for mass deployment," says Alan Shutko, software engineer for In-Touch Management Systems, a paging software maker in Melville, N.Y.

"This should make it easier to deploy Linux and fit it into a company's architecture," he adds

Three of the most important features of Red Hat Linux 7.0 are its use of the latest unreleased Linux kernel, 2.4; inclusion of more complete security features, such as a secure remote access program and Secure Sockets Layer (SSL); and a new installation program that is tailored to the Linux experience level of the user. Linus Torvalds, the creator of Linux, expects the 2.4 kernel to be available by the end of September.

"The 2.2 [Linux] kernel was a great kernel. However, it was lacking in hardware and file system support," says Jesse Noller, an enterprise engineer for a business software company in Massachusetts, adding, "general TCP/IP problems plagued it in the enterprise."

"Linux 2.4 [employed in Red Hat Linux 7.0] uses a new threading model that lets people who need speed and stability tap into the kernel and get a lightning-fast Linux serv-

"Pinstripe" power

The beta of Red Hat Linux 7.0 (code-named Pinstripe) includes:

- Use of the newest 2.4 Linux kernel, a more powerful and stable kernel.
- The newest Xfree, an X Windows environment.
- Sawfish, a Windows manager, which has been added to the GNOME desktop environment.
- · Universal Serial Bus support.
- · Kickstart, Red Hat's utility for automatically installing servers.
- Enhanced LDAP authentication, Kerberos, OpenSSH and OpenSSL cryptographic and encryption tools.
- Improved help facility and installation.
- New software update facility.
- The newest version of KDE, a graphical interface for the desktop.

er on an eight-processor Intel box that can serve up a few million pages for a fraction of the cost of Windows NT," Noller says.

Red Hat confirms that Linux 7.0 will also have symmetrical multiprocessing support for up to eight server processors, although the company declined to discuss the upgrade details in depth.

Noller says that enhancing Lightweight Directory Access Protocol (LDAP) authentication functionality and adding SSL are also a boon for corporate networks. With LDAP and SSL exploited, "people in an enterprise environment can have multitudes of machines governed with a singular policy [model]," Noller adds. "This is an

excellent step for Linux in the way of enterprise-grade security support."

Other Linux users, many of whom will gather this week for the LinuxWorld Conference & Expo in San Jose, agree.

"Network managers need better tools to centrally administer network information, such as user IDs and passwords," says Bill McCarty, associate professor of IT at Azusa Pacific University in Azusa, Calif. "The Network Information Service {NIS} was too insecure to serve this function." NIS is a service that provides information that has to be known to all machines on the network.

McCarty has at least one concern, however.

"Unless LDAP is specially

configured, it currently transfers passwords across networks in clear text, which is unacceptable," he says.

Red Hat says it solved this problem by disabling LDAP; during installation it can be correctly enabled by experienced administrators.

Two other security technologies, OpenSSH and OpenSSL, which were formerly available separately because of U.S. export laws on encryption, will be included in Linux 7.0.

OpenSSH replaces Telnet, which is a utility Noller believes is problematic. "Telnet is one of the most insecure protocols on the planet," he says. "Anything is better. Why not use strong encryption [such as OpenSSH]?"

Another customer echoes that assessment.

"Secure logons are important to us," says Josip Loncaric, senior staff scientist at NASA Langley Research Center in Hampton, Va. "Remote logins require OpenSSH because otherwise important information, [such as] passwords, could be compromised. Remote users need to access our systems without this risk."

Red Hat has also improved the installation and configuration program for Linux 7.0. The firm added different installation methods for inexperienced to expert system administrators, changed the manner in which security options, such as Kerberos or LDAP, are installed, and separated workstation from server installations.

This change is significant to at least one user who understands the skill levels of people installing Linux.

The user, who asked not to be identified, says any operating system that is shipping with services turned on runs the risk of unnecessary services being used by hackers to break in. Red Hat has disabled several security options that could cause problems for inexperienced installers.

Red Hat also improved its automated Kickstart installation utility with the addition of new commands and the ability to partition previously unused disk space.

"We insert a Kickstart diskette into a new machine with a blank, unpartitioned disk, turn it on and in 10 to 15 minutes have a fully configured system," says NASA's Loncaric. "Kickstart partitions the disk, then installs from a remote file server over the network, customizes a few things, [such as] IP address and host name, installs [the Linux boot loader], then reboots the system."



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set security policies, make security inventories for network servers and fix security loopholes from a management console.

"Right now there are a lot of tools out there on the intruder-detection end of things for Linux, but they're really raw," says Maurice Smiley, a systems administrator at Gulf Interstate Engineering, a Houston firm that designs equipment for the gas and oil industries. Smiley says he'd like to see more integrated and easily manageable Linux security and administration tools.

"If a new type of [hacker] attack comes, you have to gather the packets, analyze them and create your own new rules every time," Smiley

says. "It'd be nice if there was a way to automate that."

Caldera will debut Cosmos, its first network management product for Linux, which will have many of the same features as CA's product — such as policy-based management. Cosmos will also include features such as Linux server health monitoring, printer configuration, and server hardware and software inventory. It will run on all Linux distributions.

IBM will announce a Linux-compatible version of its Netfinity Director software. The tool lets users look at the status of software and hardware components on Linux-based Netfinity servers. The package also lets customers distribute software updates to remote PCs from a central Linux server. The product will ship by the

first quarter of next year. IBM will also announce a Linux-based NetVista thin client.

Eazel of Mountain View, Calif., will debut its Nautilus desktop environment and file manager. The company, founded by former Apple Macintosh interface gurus Andy Hertzfeld and Michael Boich, has developed a graphical user interface based on the popular GNOME interface for Linux that includes enhanced file management features and a customizable desktop for novices or advanced Linux users as well as an integrated Web browser. A beta-test version will be available for download the week of the show at www.eazel.com, and Release 1.0 will be available in the fall.

Senior writer Marc Songini contributed to this

CMA,

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Michalecki, director of telecommunications and IS for the University of Nebraska in Lincoln.

Michalecki, immediate past president of the International Communications Association, notes that the once-independent ICA national convention was merged into the annual SuperComm trade show for service providers several years ago. Even at that, registration for the ICA portion of the convention "seems to get a little less every year," she says.

Part of the problem is the trend of pushing corporate voice and data management together, and the resulting pull of large Internet and data-networking trade shows.

"There's a different outfit running telecom these days," Michalecki says. "They're not as interested in being part of this kind of group as the old telephone people were."

More demands

Another tug on people's time are vertical-industry user associations and vendor-specific meetings, she says. For example, a user group for college telecom administrators called ACUTA enjoys strong attendance at its meetings, she says

CMA leaders, who asked not to be identified, noted that last year CMA had signaled a move away from a voice orientation by renaming its show Corporate Networks from its previous long-standing name, TelCom.

But they conceded the move may have come later than it should have and left the CMA lumped together in users' minds with other traditional telecom groups.



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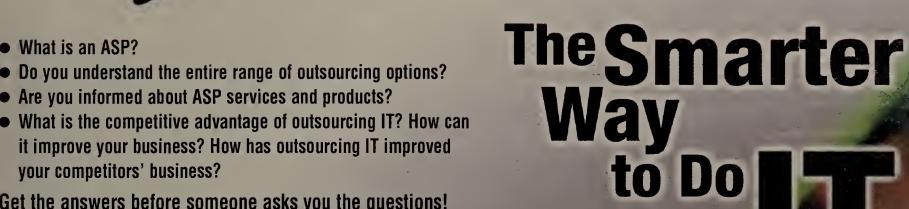






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Regulators OK petrochemical B2B exchange

Trade-Ranger claims to be the first business-to-business exchange to get the blessing of the FTC and the European Union.

BY ELLEN MESSMER

HOUSTON — Trade-Ranger, the petrochemical industry's business-to-business online marketplace formed last April by 14 oil refiners and Mitsubishi, says it has won the government approvals needed to begin operation next month.

The Federal Trade Commission and the European Union each raised antitrust concerns about online exchanges. Consequently, many of the planned business-to-business exchanges, including one for the automotive industry, have been subjected to an unexpected regulatory review that has delayed their start.

Last week, though, Trade-Ranger said it passed muster with the FTC and European Union. "We are the first to make it through the process," says Peter Lamell, joint chief executive of Trade-Ranger and vice president of the Shell Internet e-commerce division. He expects Trade-Ranger to

proceed without further investigation.

Lamell notes that Trade-Ranger's legal staff "proactively" went to the FTC and the European Union Mergers Task force about a month ago to submit paperwork and discuss antitrust concerns. According to Lamell, FTC and European Union officials stated the importance of having adequate security practices in place to protect sensitive data about purchases.

Although Trade-Ranger is owned by a veritable Who's Who of the oil industry, the exchange will act as an independent and neutral operation, LamelI says.

Most of the big planned business-to-business exchanges are involved in discussions about antitrust issues with the FTC and European Union, says Nick Riso, vice president of e-business at Nestle, which is involved with about 50 companies in launching an exchange called Transora for use by the packaged-goods industry.

"With Transora, we're just trying to create more efficiency across the value chain," says Riso, who was

Trade-Ranger gets a 'go'

Petrochemical business-tobusiness exchange Trade-Ranger has won regulatory approval to operate from the **Federal Trade Commission** and the European Union.

Members include:

- Royal Dutch/Shell
- BP Amoco
- Conoco
- Dow Chemical
- Equilon Enterprises
- Mitsubishi
- Motiva Enterprises
- Occidental Petroleum
- Phillips Petroleum
- Repsol YPF
- Statoil, Tosco
- TotalFina Elf
- Unocal

heartened to hear that at least one exchange has gained regulatory approval.

Originally called the Energy and Petrochemical Procurement Exchange, Trade-Ranger's founding members invested several million dollars in the venture, although an exact figure has not been made public. Collectively, Trade-Ranger members spend about \$125 billion in oildrilling and refining tools and services, plus office supplies.

The exchange selected the Commerce One MarketSite catalog and transaction software as the e-commerce technology platform.

Many of the announced

trade exchanges say they plan to earn revenue by charging the seller a percentage of each sale. Although Trade-Ranger is still finalizing its business model, Lamell promises the petrochemical exchange isn't going to make it hard on sellers. Now that it's gotten regulatory approval, one of the biggest challenges for Trade-Ranger will be to build a critical mass of sellers.

A central effort under way at Trade-Ranger is defining the technical specifications for e-catalog content, which sellers will have to update regularly to the Commerce One MarketSite platform.

Firewall,

continued from page 10

by the firewall, says Greg Kleine, DSLnetworks' vice president of engineering, because the firewall is hardwarebased.

The NetSentry service works by learning the range of trusted IP addresses on a network and dropping any packets that come from a source outside that range.

DSLnetworks customers will be notified that the firewall service is being activated, Kleine says. Unless they request to be removed from the service, the customers will receive it automatically.

DSLnetworks tested the firewall to ensure it wouldn't interfere with other firewall or VPN equipment customers might have installed, Kleine

Kleine notes the firewall service provides only basic protection.

"We're not claiming this is going to provide the level of security a lot of businesses are going to want, but it's something and it can be effective," he says.

In the near future, DSLnetworks plans to add other managed firewall services through Shasta 5000s. The company will charge additional fees for these services.

IBM, continued from page 8

on legacy data.

This suite gives companies some flexibility in setting up their host-access applications — for instance, they might use PCOMM inside their organizations but Host On-Demand for their browser-based partners or remote personnel.

If they choose to move their internal staff to Host On-Demand later, they can without paying extra. The suitc, scheduled for availability by Oct. 1, will run on Windows NT and 2000, Unix, OS/390 and OS/400, and cost \$300 per

The suite appeals to Bill Scott of ScotSystems, a Vicksburg, Miss., application service provider that offers financial applications used by convenience stores. Scot-Systems, which runs Host On-Demand 4.3 on an AS/400, currently delivers its application services to customers in a text-based format. Scott says

the new suite, with IBM Screen Customizer, sounds like it would let him offer customers an easy-to-tweak, affordable graphical user interface (GUI) that could be downloaded rapidly. "Many customers have been asking about getting a Windows GUI," he says.

For IS staff who want to conduct extensive Web-tohost application development, IBM will be offering the WebSphere Host Integration Solution 2.0 suite. It includes all products in the Host Access suite, plus Host Publisher, software that lets Windows PC users access SNA data over an IP net.

In addition, IBM has now bundled Integration Solution 2.0 with WebSphere Studio Professional Edition and Application Server Advanced Edition developer tool kits. This will let customers add even more sophisticated Web GUIs to their 3270s and other legacy software without having to perform a major rewrite of the host applications.

Moreover, IBM says it would cost \$67,500 per 100 users to buy the products separately; as a package, it will now cost \$45,000. Host Integration Solution 2.0 will run on Windows NT and 2000, OS/390, OS/400 and Unix hosts, and will be available by

IBM will also offer enhanced versions of its individual hostaccess products. Among these will be Host On-Demand 5.0, which now comes as a set of software components — not as one fixed package. IS staff can pick the features they want to make available to end users, speeding the product's initial applet download time (IBM says a basic tn3270 session could download up to three times faster than before). It will be available by Oct. 30 and included as part of the Host Access Client Package or priced per user.

IBM: www.ibm.com/soft ware/webservers/host integration

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Cisco veteran Listwin departs to wireless IP firm

BY JIM DUFFY

SAN JOSE — Cisco veteran Don Listwin, one time considered to be the heir apparent to John Chambers as Cisco's CEO, has left the company to head up a new firm formed from the \$6.4 billion merger of Phone.com and Software.com.

Listwin will become president and CEO of the merged company, which has not been named yet. The firm will combine Phone.com's software for connecting wireless devices to the Internet with Software. com's e-mail and IP unified messaging software. Listwin had been on Software.com's board since 1997. Cisco has a minority stake in the company.

Listwin joined Cisco in 1990 as a marketing manager and rose to become the No. 2 executive at the company and one of only two Cisco executive vice presidents. He led Cisco's corporate marketing, service

provider and consumer lines of business.

Those duties will now be assumed by Chambers, Senior Vice President Kevin Kennedy and Senior Vice President Charlie Giancarlo, respectively.

Listwin's decision to leave Cisco was made over a matter of days, Chambers told Wall Street analysts in a conference call last week.

"It's with mixed feelings I announce my departure from Cisco," Listwin said during the call."This is a very difficult decision for me, but the opportunity to be CEO aligned with my longstanding career goals. Over the last five to six months, I've been wrestling with the decision to stay with Cisco or join one of our ecosystem partners. Going forward, my goal is to create an even stronger partnership between my new com-



Listwin was once considered heir apparent to Cisco CEO John Chambers.

Don has played at Cisco, it seems only appropriate to formally thank him for his many contributions," Chambers said.

pany and Cisco."

"Given the role

Listwin considered by many to be the most likely successor to Chambers, but recently

Listwin was downplaying that likelihood.

In May, Fortune magazine wrote that Listwin said he didn't want the Cisco CEO job and the high-profile statesmanship that comes with it. Also, Chambers indicated he will remain CEO for the next few years and Listwin didn't want to wait that long, according to reports.

An aggressive and self-confident executive who does not like his strategies or tactics ques-

tioned by analysts or the media, Listwin is credited with devising and executing some of the plans that helped Cisco grow from a \$69 million company in 1990 to the \$19 billion behemoth it is today. Among his feathers are Cisco's hugely successful shift to the service provider market, which doubled its bookings from fiscal 1999 to fiscal 2000; and the company's "ecosystem" strategy of establishing targeted partnerships to attack specific

e-commerce opportunity. But analysts say Listwin is not solely or directly responsible for some of the successful programs for which he's given credit. There have also been some bombs, such as the CiscoPro effort to push high volumes of Cisco product through retail and direct mail channels, and the troublesome integration that followed the \$4 billion StrataCom acquisition in 1996.

segments of the Internet and

"Don's been an active partici-

pant in who to buy and when, but Cisco's a big company and I don't think it runs on individuals anymore, except for Chambers," says Frank Dzubeck, president of Communications Network Architects, a Washington, D.C., consultancy."The rest of the individuals behind Chambers, no matter whether they think it or not, are all employees. Is Don Listwin's leaving going to have any effect on the company? The answer is

Cisco has continued its torrid pace despite the recent departures of high-level executives, such as Selby Wellman, site executive at Cisco's Research Triangle Park, N.C., operations, and Chief Technology Officer Judith Estrin.

Nonetheless, Listwin is a strong salesman and is customer-focused, Dzubeck says, two attributes that should be beneficial in his new role at the company formed from the Phone.com and Software.com merger.

Cisco, continued from page 1

1999, the worldwide market was \$776 million, down from \$1 billion in 1998, according to Dell'Oro. The market for Layer 3 Ethernet, meanwhile, exploded from \$620 million in 1998 to \$2 billion last year.

It therefore behooves vendors such as Cisco - which had a 25% share of the enterprise ATM switch market in 1999, second to Marconi's 30% — to dress up their ATM switches with as much packet technology as possible to make them appealing to users curtailing their investments in

"Cisco's trying to make the next step to what we're calling next-generation networks, which is packet-switched," says Eric Thompson, principal analyst at Dataquest in San Jose. "They're just trying to fill out their product line so they can do packet over ATM and extend that out."

On the competitive front, Marconi markets its ESX-3000 as an integrated Ethernet and ATM switch with a 20G bit/sec backplane.



Cisco's Catalyst 8500 switches are being enhanced to better handle a mix of traffic.

Networks has eight-port OC-3 and two-port OC-12 ATM modules for its Passport 8600 routing switch, but that product is positioned more as an Ethernet switch than an ATM

Enterasys' SmartSwitch 9000 has an integrated packet- and cell-switching backplane, but the company is encouraging users to trade that switch for the new Matrix E7, a Layer 2 to Layer 4 frame/packet wiring closet switch that supports ATM uplinks. Enterasys also has the SmartSwitch 6500, which features a dual-bus backplane for integrating ATM and Gigabit

Cisco's new products for its

five-slot Catalyst 8510 and LightStream 1010 switches include an ATM Routing Module (ARM) for routing between ATM and Layer 3 interfaces; software for the ARM that encapsulates IP over ATM; and access control list (ACL) daughtercards. Cisco is also adding inverse multiplexing WAN interfaces to

the 8510.

For the 13-slot Catalyst 8540 core switch, Cisco is unveiling OC-12c packet-over-SONET (POS) uplinks; dual-port Gigabit Ethernet modules with pre-installed ACL hardware; and an OC-48c link that extends connectivity over longer distances.

Cisco confirmed that it will announce these products this week but declined further

The ARM is an integrated packet/cell switching backplane that performs Ethernetto-ATM bridging and routing. It alleviates the previous requirement for users to install separate backplanes to bridge Ethernet workgroups at the

edge of an ATM core network.

The ARM debuted last year for the 8540 (www.nwfusion. com, DocFinder: 9439). That product supports 64,000 routes and 64 LAN Emulation

The IP encapsulation over ATM software for the ARM is compliant with the Internet Engineering Task Force's RFC 1483 specification. RFC 1483 defines how to encapsulate multiple protocols over ATM Adaptation Layer 5 (AAL-5). AAL-5 is a specification for adapting packets to ATM cells.

The ACL daughtercards are intended to let users extend router-type security and traffic control to the ATM switches.

The Inverse Multiplexing over ATM (IMA) module for the 8510 features eight T-1/E-1 ATM ports. It is designed to let users incrementally increase WAN bandwidth beyond T-1 when procuring a T-3 circuit would be too expensive.

The OC-12c POS uplink module for the 8540 is intended to help users scale their metropolitan-area network and WAN infrastructures. In addition to an OC-12c POS link, the module features a Gigabit Ethernet port, pre-

installed ACL hardware and up to 256,000 routing table

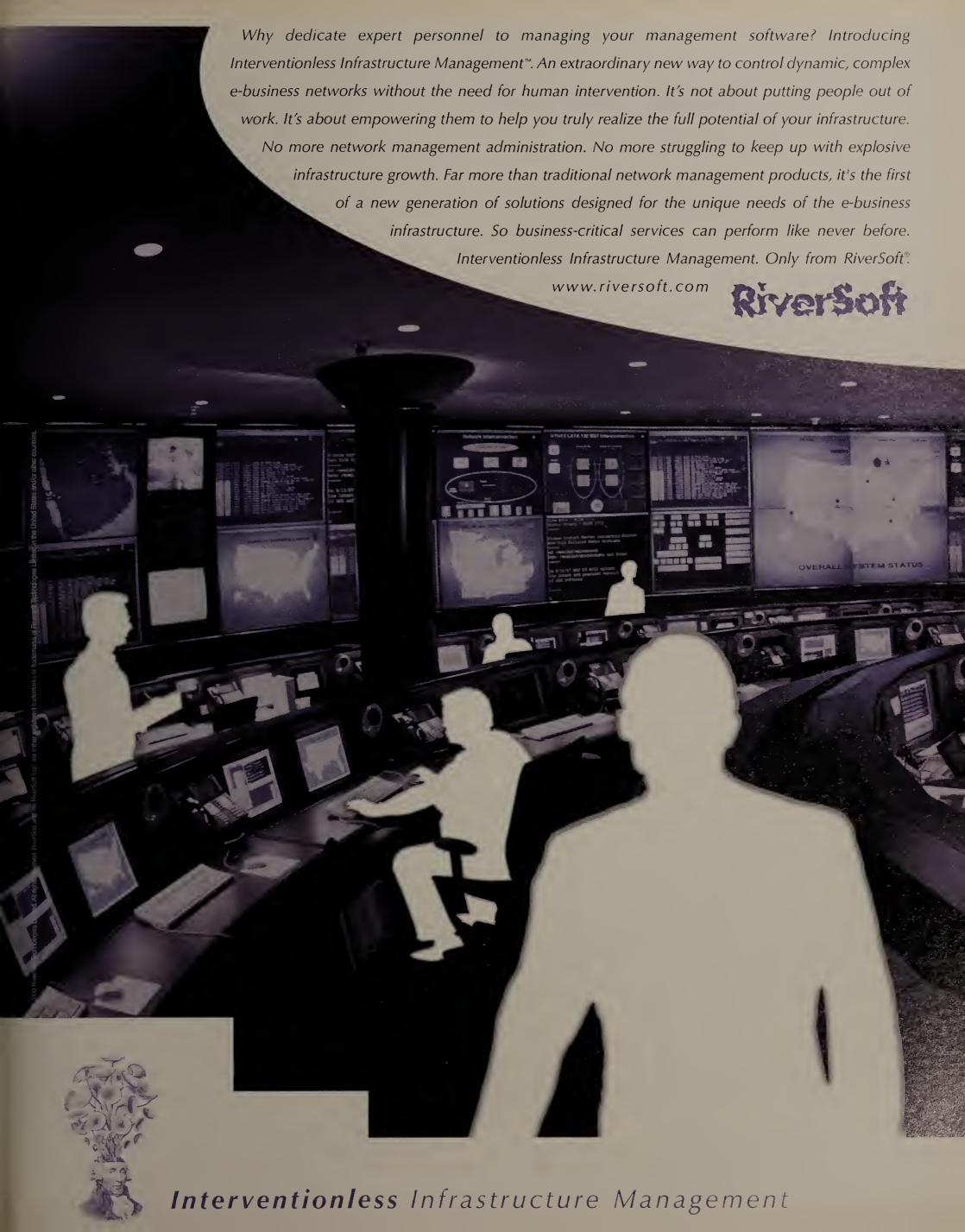
Cisco unveiled OC-12c ATM uplinks for the 8540 last year.

A pre-installed ACL daughtercard is also a feature of the dual-port Ethernet boards for the 8540. Previously, users had to purchase and install this daughtercard separately on the 8540's switching and management engine to get router-like security on the switch. These Gigabit Ethernet cards also support up to 256,000 routing table entries.

The "long reach" OC-48c port adapter for the 8540 lets users connect sites up to 80 kilometers away at speeds of 2.5G bit/sec. The previous limit was 15 kilometers.

Pricing and availability of the new products was not available at press time. If the cur ARM, ACL daughtercard and IMA modules announced last year for the 8540 are any indication, users can expect to pay \$25,000, \$4,000 and \$9,995, respectively.

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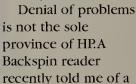
Vendors in denial: Prints at 11

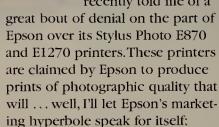
previous columns, I have been less than complimentary about Hewlett-Packard support. This was because I bought an HP Pavilion 8485Z about a year ago and the display on the damn thing has frequently frozen for no apparent reason.

Despite a couple of calls to HP tech support, several e-mail exchanges and endless fooling around by yours truly, no solution has been found. Indeed, HP's attitude seems to be total denial. The trouble is, I can't believe that I am the only purchaser of an 8485Z to have this problem.

Now, thanks to some insight from Backspin readers, the problem seems to have been cured by switching off the hardware graphics acceleration. Of course, the dis-

> play is now hardly leading-edge quality - scrolling has become a gut-wrenching screen spasm, and 3-D displays aren't what they used to be but at least it doesn't lock up on me anymore.





"Here today, Here tomorrow. Print your photos with the EPSON Stylus Photo 870 inkjet printer and they'll be beautiful and fade-resistant for years to come — as long-lasting, in fact, as traditional color photo lab prints. We're talking about bright and colorful pictures boasting 1,440 by 720 dots per inch of photo quality. Shots so stunning you'll definitely want them to last."

Epson was claiming a 10-year archival life for the prints. The trouble was users were finding that prints were fading to orange hues in less than 24 hours!

There ensued a long and complex debate on bulletin boards and at trade shows by users who had amazingly deep technical knowledge about printing technology (people with the kind of knowledge that the Epson marketing folks should never attempt to argue with or lie to). I could quote some of the exchanges, but the heady mixture of chemistry and theory is heavy reading.

Let me cut to the chase:The problem seems to have been ozone. Apparently the chemicals used in the inks are sensitive to ozone levels, and for prints to have real longevity, they must be encapsulated. Needless to say, the photographers in the crowd were scandalized that a claim such as 10-year stability was made when it patently wasn't true.

The bottom line was that users were actually very positive about Epson as a company (quote: "The company has almost single-handedly freed photographers from depending on labs.") but appalled by the inability of the company to deal effectively and decisively with the problem.

Since then it appears Epson has been refunding the really unhappy customers but still selling the printers without adequate warning. If any of you know where this whole mess has got to, let me know.

Curiously, HP just solved my own printer problem. I bought an HP 2000C and it suddenly insisted after a few months of excellent service that two of the ink cartridges were empty. As I had just parted with \$60 for new cartridges, I knew I had a problem.

HP's tech support answered the phone in less than 5 minutes, diagnosed the problem in another 5, admitted it was their fault and that the warranty applied. HP shipped a replacement machine that arrived the next day and replaced the ink cartridges. Pleasant, knowledgeable techs and effective service.

Now if I could just get the HP printer support people to transfer to the HP PC support group, my problem with the Pavilion might get solved. Then we'll get 'em over to Epson, sort that out and then move them on to Microsoft.

Rank optimism to nwcolumn@ gibbs.com.



OK, Mark, my turn.

Regular readers of this page may have noticed that 'Net Buzz and Mr. Gibbs over on the left do not see eye-to-sunglasses on Napster. Or on the recording industry's lawsuit against that company. Or on the wisdom of applying old-world intellectualproperty protections to an Internet that appears ever more capable of mocking those conventions.

Specifically, I believe Napster is a quasicriminal enterprise that deserves public scorn and a purposeful lashing from those who enforce federal copyright law. Mr. Gibbs

apparently believes that anyone who thinks as I do on this matter has his head up . . . uh, is wrongheaded.

PAUL

MCNAMARA

In his Aug. 7 column, which sparked this reply, my colleague borrowed from Dickens to describe Judge Marilyn Patel and her recent ruling against Napster: "The law is a ass, a idiot." You can read the full context at www.nwfusion.com, DocFinder: 9429.

<< Gibbsian Digression No. 1: Why couldn't Dickens have done future generations a favor by calling the law "an ass" and "an idiot" instead of "a ass" and "a idiot?" Would have saved many a writer from misquoting him.>>

Buzz believes the brilliance of Patel's ruling is matched only by its blinding obviousness. Her honor essentially ruled that Napster is running a chop-shop — with stolen music the booty instead of stolen cars — and the company should stop doing this right away because it's likely the plaintiffs will win this lawsuit. An appeals court later put the kibosh on that "right away" part, setting up another courtroom showdown this week.

But who needs a courtroom when you've got trade-pub pundits arguing the case?

A stipulation is in order: The learned Mr. Gibbs has forgotten more about technology than his page-mate possesses. The good news for me is this issue has precious little to do with technology. The fact that Napster, Inc., is a business built upon the transference of digital files — as opposed to the mailing of eight-track tapes or stone tablets shouldn't and ultimately won't matter a byte in the eyes of the law.

Last week's column from The Goateed One attempted to paint Patel's anti-Napster ruling as "censorship," and buttressed the point with a dictionary definition of the word.

Allow me to rebut by way of an earlier column from Mr. Gibbs. There he posited that holding Napster liable for any copyright infringement that might be perpetrated by Napster users is tantamount to prosecuting the maker of a criminal's getaway car.

I'll spare you the dictionary definition of "specious." Let's just say that likening legal action against Napster to censorship is akin to saying a judge who convicts a car thief is "censoring" the bad guy by stifling his entrepreneurial expression.

Moreover, Napster lawyers have gone out of their way to insist that the company is not in any way, shape or form a publisher, or even a purveyor of copyrighted music. They claim the business is merely an ISP-like conduit.

Patel did not censor a conduit. She listened to Napster's preposterous story and called a fairy tale a fairy tale.

There have been so many red herrings circling this debate that I'm surprised the magazine of that name hasn't sued someone for copyright infringement.

For example, many a Napster apologist has lambasted the record companies for being technologically shortsighted . . . not to mention dumb and greedy. Maybe, maybe not, but this much is certain: If the shortsighted, dumb and greedy were denied the same legal protections as everyone else in this country, our taxes could be cut dramatically because we'd spend millions less on law enforcement.

<< Gibbsian Digression No. 2: Note to self. Send memo on tax-cutting plan to Al Gore.>>

Pick a side, any side. The address is Buzz@nww.com.



MARK GIBBS

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